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# The Impact of a Freshman Academy Small Learning Community on Student Achievement and Engagement

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**THE IMPACT OF A FRESHMAN ACADEMY SMALL LEARNING COMMUNITY  
ON STUDENT ACHIEVEMENT AND ENGAGEMENT**

**BY**

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**Submitted as Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Education  
Seton Hall University**

**2009**

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## ABSTRACT

### THE IMPACT OF A FRESHMAN ACADEMY SMALL LEARNING COMMUNITY ON STUDENT ACHIEVEMENT AND ENGAGEMENT

This study focused on an innovative method of addressing the transition problems commonly associated with public school students' journeys from middle school to high school in ninth grade: the freshman academy. Freshman academies are small learning communities within large comprehensive high schools that isolate ninth graders and establish a more intimate program. The purpose of this study was to explore whether a freshman academy positively impacted the academic performance and engagement of its students, specifically in the areas of grade point averages, year-end grade in English, year-end grades in social studies, credits earned, failures, discipline referrals, and attendance.

This study compared data from three cohorts of ninth graders at Springfield High School in Springfield, Delaware County, Pennsylvania: one that transitioned without an academy, one that transitioned with an academy, and one that transitioned with an academy and a one-to-one laptop program. A review of the literature on freshman academies suggested freshman academies do have a significant impact on engagement and achievement levels on both the high school and the college level. Data were collected on the three cohorts at Springfield High School, and MANOVA and repeated measures ANOVA tests were applied to test five hypotheses of the relationship of freshman academies and laptops to student achievement and engagement.

The results show that a freshman academy positively impacts student achievement. Students who experienced a freshman academy had significantly higher grade point averages than those who did not experience a freshman academy. They were also less likely to be at-risk for failing a course and were more likely to earn eight credits. There were no differences between genders, but there were significant differences for students designated as regular education and special education. The findings do not indicate that the effects of the freshman academy are sustained in the tenth grade year, and the results also indicate that the one-to-one laptop initiative has a negative impact on ninth graders' academic achievement. The results of this study will help school leaders decide the type and level of intervention they wish to institute to help ease the difficult transition from middle to high school.

## ACKNOWLEDGEMENTS

I would like to begin by thanking my wife Megan for her patience, encouragement, and support throughout this entire four-year journey. I know this program and the writing of this dissertation was easier by far than what she was doing by herself at home to keep our family running smoothly. While I was in South Orange enjoying my second college experience, she was battling week-long power outages, morning sickness, and ill-fated trips to Florida with inevitable flight delays—with two kids on her hip. Without her love and support, I would not have been able to achieve this doctorate, and I am forever grateful for her sacrifice. Even though they will not remember those summers and weekends that Dad went missing, I hope that my pursuit of this degree will inspire Jack, Maeve and Molly in their own education and endeavors in life, whatever they may be. I hope that I have shown them that through hard work and determination, you can achieve your goals.

I am deeply grateful to Dr. Martin Finkelstein, my dissertation advisor, for his steady guidance throughout this process. He was patient when life got in the way of my writing, and he was a constant source of motivation when I was productive. He challenged me to strive for excellence, and I am grateful for his support. I would also like to acknowledge the other members of my committee: Dr. John Collins, Dr. Rina Vassallo, and Dr. Marcy Hessinger. All three took time from their busy lives and careers to give me useful, detailed feedback, and all three supported me and urged me to the finish line.

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## DEDICATION

This work is dedicated to my wife Megan, for her love, her support and encouragement, her uncanny ability to look past my shortcomings and her ability to hold the family together while I was pursuing this degree, to Jack, Maeve, Molly, and the fourth Fulco child who will be joining us in a few months, that they may learn from Dad's example that education is the key that can unlock many of the opportunities that life has to offer, to my Mom and Dad, for their love and encouragement, and for instilling in me the work ethic and the drive that made it possible for me to achieve this dream, to my friends from Cohort IX, for their support, encouragement, and friendship throughout this difficult degree program, and to the many students that I have had the pleasure of teaching and getting to know over the past 12 years, who have made my job more than just a career, but a passion.



# TABLE OF CONTENTS

	<u>Page</u>
ACKNOWLEDGEMENTS .....	v
DEDICATION .....	vii
LIST OF TABLES .....	xi
LIST OF FIGURES.....	xii
I STATEMENT OF THE PROBLEM.....	1
Introduction .....	1
Problem Statement .....	6
Purpose of the Study .....	7
Hypothesis.....	7
Research Questions .....	8
Significance of the Study .....	9
Theoretical Framework .....	10
Definition of Terms.....	10
Summary Organization of the Study.....	12
II LITERATURE REVIEW .....	14
Introduction .....	14
Ninth grade Transition Problems .....	14
School Size, Small Schools and Small Learning Communities.....	19
Achievement.....	24
Reduction in the Achievement Gap .....	25
School Safety.....	26
Attendance/Retention .....	26
Extracurricular Participation .....	27
Teacher Satisfaction .....	27
Cost.....	27
Collegiate Freshman Programs .....	28
Freshman Academies in Progress .....	37
Summary .....	41
III METHODOLOGY.....	42
Introduction .....	42
Description of the Freshman Academy.....	42

Study Design .....	45
Population.....	46
Data Collection.....	47
Hypotheses .....	48
Research Questions .....	49
Individual Hypotheses.....	50
Data Analysis .....	51
Hypothesis 1 .....	57
Hypothesis 2.....	58
Hypothesis 3 .....	59
Hypothesis 4.....	60
Hypothesis 5.....	61
Limitations .....	62
Delimitations .....	65
Summary .....	66
 IV ANALYSIS OF THE DATA.....	 67
Introduction.....	67
Description of the Sample.....	67
Individual Hypotheses.....	70
Findings for Hypothesis 1 .....	71
Preliminary Findings.....	72
Findings of the Preferred Model .....	80
Grade point average variables.....	80
Credits earned.....	81
Failures.....	82
Discipline referrals.....	84
Attendance.....	86
Summary for Hypothesis 1.....	86
Findings for Hypothesis 2 .....	87
Preliminary Findings.....	87
Findings of the Preferred Model .....	89
Summary for Hypothesis 2.....	90
Findings for Hypothesis 3 .....	90
Preliminary Findings.....	91
Findings of the Preferred Model .....	95
Grade point average variables.....	95
Credits earned.....	95
Failures.....	96
Discipline referrals.....	97
Attendance.....	97
Summary for Hypothesis 3.....	98
Findings for Hypothesis 4 .....	98
Grade Point Average .....	99
English GPA.....	100

Social Studies GPA .....	100
Credits Earned .....	103
Failures .....	104
Discipline Referrals.....	104
Attendance.....	105
Summary for Hypothesis 4.....	109
Findings for Hypothesis 5 .....	109
Preliminary Findings .....	110
Findings of the Preferred Model .....	113
Grade point average variables.....	113
Credits earned.....	113
Failures.....	114
Discipline referrals.....	114
Attendance.....	117
Summary for Hypothesis 5.....	117
Summary of the Data Analysis.....	118
 V   SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS.....	120
Introduction.....	120
Overview of the Study.....	121
Research Design.....	122
Data Analysis Procedures.....	124
Summary of the Findings .....	125
Hypothesis 1 .....	125
Hypothesis 2.....	127
Hypothesis 3 .....	128
Hypothesis 4.....	129
Hypothesis 5.....	131
Discussion and Implications.....	132
Recommendations for Further Research .....	135
Conclusion.....	139
 REFERENCES.....	140
 APPENDIX A .....	150

## LIST OF TABLES

Table 1	Percentage of 8th to Tenth Grade Dropouts Who Reported that Various Reasons for Dropping Out of School Applied to Them .....	3
Table 2	Frequency Table for Test Subjects.....	68
Table 3	Frequency Table for Test Subjects by Subgroup Gender .....	69
Table 4	Frequency Table for Test Subjects by Subgroup Curriculum Designation ....	70
Table 5	Results of Fitting a Taxonomy of MANOVA Models Predicting Student Achievement and Engagement for Students in a Freshman Academy Versus a Control Group.....	79
Table 6	The Effect of Cohort Group on Credit Acquisition.....	82
Table 7	The Effect of Cohort Group on Failures .....	84
Table 8	The Effect of Cohort Group on Discipline Referrals .....	85
Table 9	Results of a Taxonomy of MANOVA Models Predicting Student Achievement and Engagement for Males and Females in a Freshman Academy Versus a Control Group .....	88
Table 10	Results from a Series of Loglinear Tests of the Links Among Treatment, Gender, and Student Achievement and Engagement Variables ...	90
Table 11	Results of a Taxonomy of MANOVA Models Predicting Student Achievement and Engagement for Regular Versus Special Education Students in a Freshman Academy Versus a Control Group.....	92
Table 12	Results from a Series of Loglinear Tests of the Links Among Treatment, Curriculum Designation, and Student Achievement and Engagement Variables.....	96
Table 13	Repeated Measures ANOVA for Social Studies GPA.....	101
Table 14	Repeated Measures ANOVA for Credit Acquisition.....	103
Table 15	Repeated Measures ANOVA for Attendance .....	107
Table 16	Results of a Taxonomy of MANOVA Models Predicting Student Achievement and Engagement for Students Who Received Laptop Computers in a Freshman Academy Versus a Control Group .....	111
Table 17	The Effect of Cohort Group on Grade Point Average Variables .....	112
Table 18	The Effect of Cohort Group on Discipline Referral Rate .....	116

## LIST OF FIGURES

<i>Figure 1.</i> Dispersion of Variables for Ninth Grade Absences. ....	54
<i>Figure 2.</i> Studentized Residuals for Ninth Grade Grade Point Averages.....	56
<i>Figure 3.</i> Distribution of Ninth Grade Social Studies Grade Point Averages. ....	73
<i>Figure 4.</i> Distribution of Ninth Grade Discipline Referral Rates. ....	75
<i>Figure 5.</i> Distribution of Ninth Grade Failures.....	77
<i>Figure 6.</i> Bar Graph Comparing Social Studies GPA for Regular Education Versus.....	94
<i>Figure 7.</i> Differential Means for Cohorts 1 And 2 on Social Studies GPA Over Two Years. ....	102
<i>Figure 8.</i> Differential Means for Cohorts 1 And 2 on Attendance Over Two Years.....	108

## CHAPTER I

### STATEMENT OF THE PROBLEM

#### Introduction

For many American high school students, the ninth grade year presents an almost insurmountable set of challenges as students leave their smaller, highly structured middle schools and enter large, comprehensive high schools. The challenges are even greater for students with learning disabilities or physical disabilities, students from low socioeconomic backgrounds, students who lack adequate parent support, and students who suffer from low self-esteem, drug and alcohol abuse, or depression. Yet, despite these obstacles, most high schools in the United States continue to use the “sink or swim” approach for ninth grade students; administrators and teachers give students a short orientation and building tour, and then turn the students loose on the high school building with their schedules in hand. Unfortunately, this system is simply not effective, and the result is that too many ninth grade students under-perform, become disconnected, or drop out of high school.

Fulk (2003) asserts that in ninth grade, students feel much more academic pressure than ever before because they must earn passing grades in their core subjects to satisfy graduation requirements. This pressure is intensified for students with learning disabilities. Zigmond (1990) argues that, indeed, the ninth grade year is the most crucial for students with disabilities. If they do not get the help and support they need during this critical year, he argues that their chances for graduation are greatly diminished. Ninth grade can most definitely be a make or break year for students, and secondary school

success or failure is often determined in this first year of high school (Reinhard, 1997).

The fact that this increase in academic pressure comes at a time in the lives of adolescents of great physical, social, emotional and developmental change makes the ninth grade a virtual “perfect storm” for many students. Elias (2001) sees this combination of the changes of puberty with cognitive and social development as particularly complex and problematic. In addition, many students deal with social or family pressures and problems during this time of transition, making their adjustment to high school even more tumultuous. Dealing with the temptation of substance abuse, sexual pressures, divorce or any other major life changes has lasting effects on a student’s transition to high school. Simmons and Blyth report that students who deal with these types of life events exhibit “diminished performance” in their ninth grade year and often endure a “long-term trajectory of difficulties through later years of adolescence” (as cited in Roeser, Eccles & Freedman-Doan, 1999, p. 143).

Despite the increased pressure due to graduation requirements, grade point averages, and college aspirations, there is a marked decrease in many students’ engagement in school at a time when they should be more engaged. Lost in the vast corridors and large crowds of comprehensive public high schools, many ninth graders like school less, feel more disconnected, and lose interest in school. Voelkl (1996, p. 270) calls this emotional (and, at times, physical) withdrawal from school “one of the most widespread problems facing American educators today.” He cautions that too many students are being allowed to withdraw from the curriculum, denigrate school values, cause disruption, lose motivation, become truant, absent and dropout altogether. Furthermore, Finn and Voelkl (1993) assert that in order for students to succeed in school, they must feel a sense of

belonging. Freshmen often struggle to find this sense of belonging and therefore do not involve themselves in the school community.

This lack of student engagement often leads to students dropping out of school. Catteral (1998) cites the three most common reasons for dropping out of school as (a) not liking school, (b) not getting along with teachers and others, and (c) failing. In a 1992 study, the U.S. Department of Education discovered essentially the same reasons for student dropouts. Table 1 reveals that the primary reasons that students cite when they dropout are directly related to this lack of student engagement. Students who do not like school, do not excel in their classes, and do not get along with teachers or feel as though they are a part of the school community often leave high school before graduation, and research shows that these students have a bleak future.

Table 1

Percentage of 8<sup>th</sup> to Tenth Grade Dropouts Who Reported that Various Reasons for Dropping Out of School Applied to Them

Reasons	Male	Female	Total
Did not like school	47.8	44.2	41.2
Was failing school	46.2	33.1	39.9
Could not get along with teachers	51.6	17.2	35.0
Could not keep up with schoolwork	37.6	24.7	31.3
Felt I didn't belong	31.5	14.4	23.2
Could not get along with students	18.3	21.9	20.1
Was suspended too often	19.2	12.7	16.1

*Note. From Dropout Rates in the United States: 1991, by United States Department of Education, 1992.*



Finn and Voelkl (1993) believe that a student's level of engagement in school is in most cases closely related to his or her chance of success in school. Dynarski and Gleason (2002) take this mindset a step further by asserting that students who participate in school-related activities actually come to identify with and value the school's mission and culture. Therefore, it is critically important that upon entering ninth grade, students are not left to simply "sink or swim." The traditional model of the American public high school is no longer adequate, and too many students are left to their own devices during a critical time in their development.

Researchers and educational reformers have begun to realize that one way to keep students engaged in high school is for schools to personalize the high school experience for students. This, however, is easier said than done, since many comprehensive high schools throughout the nation have over 1,000 students, and some high schools have two, three and even four thousand students. In these vast comprehensive high schools, it is easy for students to become lost and to feel disconnected. Educators in some high schools have begun to try to break these enormous schools into smaller segments, often called small learning communities or schools-within-schools. Small learning communities do have a positive impact on attendance rates, school climate, student achievement, graduation rates, and school safety (Hertzog & Morgan, 1999). Proponents of small learning communities argue that smaller learning environments in which teachers know every student by name are more secure (even with fewer security measures), more productive, and more engaging; students in small learning communities participate more in extracurricular activities (Vander Ark, 2002). By creating an environment in which teachers can develop deeper relationships with students and

students can feel more comfortable with and cared for by their teachers, better, more meaningful learning will occur (Oxley, 2005, p. 22).

In his annual Back to School Address at the National Press Club Luncheon on September 15, 1999, the Clinton Administration's Secretary of Education Richard Riley spoke of the hardships faced by a ninth grader when he "leaves a much smaller elementary or middle school and finds himself in a very big and, at times, impersonal high school" (Riley, 1999). He declared that this is the year when grades fall, some students drop out, and other students eliminate college from their future plans. Riley proposed that the concept of the small learning community be utilized to help these freshman find their way in the comprehensive public high school: "Schools can create smoother transitions in a number of ways, such as freshman academies, regular contact with the same group of teachers or advisors, and transition courses that address new challenges from study skills to understanding other cultures" (Riley, 1999). Schools throughout the country have begun to use this concept of ninth grade small learning communities to ease the transition problems faced by so many ninth grade students. The freshman academy, also called ninth grade academy or ninth grade center, is a specialized small learning community that is usually housed within a larger, comprehensive high school, although there are a few freshman academies that are housed in a building separate from the rest of the high school population (Vander Ark, 2002).

In essence, freshman academies are autonomous programs that operate within the context of a larger high school. Ninth grade students take most, if not all, of their courses as part of this school-within-a-school. The teachers within the academy specialize in teaching only ninth grade students, and they also serve as advisors and mentors. They

also frequently share common planning time or engage in teaming with other freshman academy teachers. Often, freshman academies operate under the direction of the school's building principal, but they have a separate academy administrators as well as a counselor who works only with the freshman academy. Most freshman academies have a designated wing or floor within the school building.

The theory behind the freshman academy is that if a school isolates the freshman for the most part, the students and teachers within the academy will get to know each other better, and ninth grade students will feel more comfortable in the high school setting. Students within the academy will receive extra academic and social support, and many of the common transition problems faced by students in traditional comprehensive high schools can be avoided.

### Problem Statement

Comprehensive public high schools face the overwhelming challenge of transitioning adolescents, who are themselves weathering a multitude of physical, emotional, and social changes, from a smaller, more structured middle school to a larger, less structured high school setting. In its current form, the American high school is carrying its ninth graders through this transition with lackluster results. Ninth grade is typically the year in which an adolescent will become disengaged from school; consequently, problems with student truancy, absenteeism, disengagement, and failure often begin in the ninth grade year. Transitional problems in ninth grade also dramatically increase the likelihood that a student will dropout of high school before graduation. Schools must look at ways to restructure the freshmen year to ease the

transition of adolescents into high school and to improve their chances of earning a high school diploma.

### Purpose of the Study

The purpose of this study was to research the extent to which a freshman academy approach to ninth grade improved student engagement and student achievement. In particular, this study compared students who experienced a freshman academy to those who attended a traditionally structured high school without a freshman academy in the areas of grade point average, English year-end grades, social studies year-end grades, credits earned, failures, discipline referrals, and attendance. This study compared the data scores of freshman academy students to traditional ninth grade students who did not experience a freshman academy to determine whether any relationships exist between the freshman academy approach and higher levels of student engagement and achievement among ninth graders. This study also determined whether a one-to-one laptop program intensified the effects of the freshman academy in terms of student engagement and student achievement.

### Hypothesis

The hypothesis on which this study is based is that freshman academies improve academic achievement as measured by grade point average, English year-end grades, and social studies year-end grades, and student engagement as measured by credits earned, failures, discipline referrals, and attendance. Acceptance of this hypothesis would indeed be useful and significant to any school leader committed to increasing the engagement

and achievement of ninth grade students and reducing dropout rates. The corresponding null hypothesis that this study tests is that freshman academies do not have an impact on the levels of students' engagement and achievement of ninth grade students and that any difference between the mean scores between students in freshman academies and students in traditional high schools without freshman academies is due to sampling errors or chance.

### Research Questions

This study examined the following research question: To what extent does the implementation of a freshman academy small learning community impact the levels of student achievement and student engagement among ninth grade students? The more specific research questions included the following:

1. What impact does a freshman academy have on student achievement and engagement as measured by grade point average, ninth grade English year-end grades, ninth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance?
2. Does gender mediate the impact of the freshman academy on student achievement and engagement as measured by grade point average, ninth grade English year-end grades, ninth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance?
3. Does special education identification mediate the impact of the freshman academy on student achievement and engagement as measured by grade point average, ninth grade English year-end grades, ninth grade social studies year-end

grades, credits earned, failures, discipline referrals, and attendance?

4. What sustaining impact does a freshman academy have on student achievement and engagement over two years as measured by change between the criterion variables for ninth grade and tenth grade (grade point average, tenth grade English year-end grades, tenth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance at the conclusion of tenth grade)?
5. Does a one-to-one laptop program intensify the effects of the freshman program on student achievement and engagement as measured by grade point average, ninth grade English year-end grades, ninth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance?

### Significance of the Study

Ninth grade students across the United States are at-risk when they are left to “sink or swim” in traditionally structured comprehensive high schools (Reinhard, 1997; Simmons and Blyth, 1987; Voelkl, 1996). Nationwide data displays a consistent yet disturbing trend in which ninth grade students who had solid or even exemplary academic records before high school become apathetic and disengaged in their schooling, and many students who had not faced school discipline before ninth grade develop attendance, truancy or behavioral problems during their first year of high school. Schools must find ways to better engage ninth grade students and to ease their transition into high school. The freshman academy approach is just one innovative restructuring that attempts to accomplish these tasks; the findings in this study are highly significant to any school

administrator looking for a relatively low-cost method of restructuring the traditional high school to make high school a friendlier and more productive place for their youngest students.

### Theoretical Framework

Two educational theories form the basis of this study. The first theory is that smaller schools or small learning communities within larger schools improve student engagement and student achievement by personalizing education and helping students to feel a deeper connection to their school, teachers, and coursework (Breaking Ranks, 1996). The second theory states that students with higher levels of engagement and who have a more positive perception of school perform better academically and are better prepared for college and beyond (Voelkl, 1997; Finn & Voelkl, 1993; Breaking Ranks, 1996). Taken together, these theories directly support the concept of the freshman academy and other types of secondary school restructuring that would not only boost levels of student engagement, but also positively impact achievement among ninth graders, and quite possibly, all high school students.

### Definition of Terms

1. *Freshman Academy* is a special academy or program designed to help ninth grade students through their first year of high school by providing the students with special attention, a smaller learning environment, more interaction with teachers, and fewer outside distractions from upperclassmen (Holland & Mazzoli, 2001).
2. *Traditional High School* refers to the structure of most high schools in the United

States in which ninth grade students simply enter the high school building and experience the same freedoms as upperclassmen. Ninth grade students in traditional high schools often take classes with students in other grades, eat lunch in the cafeteria with upperclassmen, and even attend study halls and physical education classes with students who are sometimes four or five years older.

3. *Small Learning Community (SLC)* refers to the deliberate breaking down of large schools into smaller subsets characterized by cultures that support high expectations, authentic caring, close relationships between students and adults, and collaboration and positive social interaction (Steinberg & Allen, 2002).
4. *School-Within-A-School* refers to a system of school restructuring in which a large school population is broken down into several smaller communities of learners housed within the large school building (Steinberg & Allen, 2002).
5. *Student Engagement*, for the purpose of this study, refers to the premise that “the more students do something, the more proficient they will become” (HSSSE, 2005). Students who are “engaged” in their schooling spend more time studying and partaking in school-related activities, and student engagement often translates into higher grades and a better overview feeling toward school and education.
6. *Absentee Rate* refers to the number of days or portions of days that a student is not present in the school building. Often, these rates are broken down further to specify whether the absence was “excused” by the parent or “unexcused.”
7. *Discipline Referral* refers to any action by a student that led to an administrative warning or the assignment of a disciplinary consequence. Disciplinary consequences may include after-school detentions, Saturday detentions, in-school



suspensions, out-of-school suspensions, or expulsions.

8. *The Average Number of Credits Earned* refers to the total number of Carnegie Units earned by a student during the course of his or her freshman year. In the current block schedule of Springfield High School, freshmen have eight blocks in which to take course (four blocks per semester). The expected number of credits earned is 8 during the ninth grade year, and Springfield High School students must earn 27 credits in order to graduate.
9. *Failure Rates* refers to the number of courses in which a ninth grade student earns an "F" for the final grade. In the case of a student earning an "F", the student does not receive credit for the class.
10. *Grade Point Average (GPA)* numerical score obtained by dividing the total grade points by the total credits attempted. In the calculations, letter grades are converted into numbers, with A = 4, B = 3, C = 2, D = 1, and F = 0. Students who taken honors classes have their GPA's weighted to signify the added rigor of their coursework.

### Summary Organization of the Study

This dissertation is organized into five chapters, including this introduction in Chapter I. Chapter II reviews literature relevant to the freshman academy; in particular, Chapter II analyzes the literature on ninth grade transition problems, small learning communities, schools-within-schools, collegiate and university first-year programs, and the freshman academy itself. Chapter III proposes the research design and methodology and describes the collection of the data that was used in this study.

Chapter IV analyzes the data and publishes the results of the data analysis. Chapter V details the findings of the data analysis, provides discussion on these findings, and proposes further research in the area of this study.

## CHAPTER II

### LITERATURE REVIEW

#### Introduction

Although extensive research has not been done on the effectiveness of the freshman academy approach, much has been written on the myriad of problems inherent in the transition from middle school to high school. This chapter will first review the research on the transition problems that many ninth graders face and the reasons for these transition problems. Then, it will review literature on small learning communities and the school-within-a-school approach that is the basis of the freshman academy. Next, it will provide an overview of similar initiatives that have been attempted on the collegiate level and have been the basis for similar initiatives on the high school level. Finally, this chapter will review significant studies of freshman academies and their effect on student achievement and engagement.

#### Ninth Grade Transition Problems

The transition from middle to high school is challenging for almost all students, and for some students, this transition spells the beginning of the end of their formal education. Blyth, Simmons, and Carlton-Ford (1983) were among the first researchers to study school transitions in the late 1970's and have found that many high- or average-achieving eighth-graders experience a dramatic decrease in attendance and grades after their transition to high school. Crockett et al. (1989) also documented this decrease in

grades at transition points in a study of 253 adolescents. They found that students transitioning once from a primary to a secondary school had a significant decrease in grades, and they also found that students who experienced two transitions (one from fifth to sixth grade and one from sixth to seventh grade) had an even sharper decrease in academic achievement as measured by grades. Crockett et al. (1989) also found that grades were not the only thing negatively impacted by transitions; students' self-perception, as measured on the Self-Image Questionnaire for Young Adolescents (SIQYA) also declined when students transitioned from one school setting to another (Crockett et al., 1989). Alspaugh (1998) took this research further by looking at how different school configurations impacted student achievement. He found that regardless of the exact school configuration, there is achievement loss when students leave one school and enter into the next grade at a different school. While this achievement loss consistently occurred, it was more pronounced when students made multiple transitions; students who entered high school from a middle school had greater achievement loss than students who entered from a K-8 school (Alspaugh, 1998). Barone, Aguirre-Deandreis, and Trickett (1991) also found that the transition from junior high to high school resulted in a decline in grades and attendance for many students. This decline, according to their research, became progressively worse throughout the ninth grade year.

Eccles, Lord and Midgley (1991) proposed the stage/environment fit theory as one explanation of this achievement loss. They concluded that "negative psychological changes associated with adolescent development result from a mismatch between the needs of developing adolescents and the opportunities afforded them by their social environments" (p. 90). Adolescents are mired in an extraordinarily complex

developmental stage marked by rapid physical changes juxtaposed with substantial changes to their environment; this juxtaposition puts all adolescents at risk for difficulty. Most adolescents need close connections with adults and a supportive, positive peer network to successfully navigate this complex time. However, the transition to high school often limits adolescents' ability to establish close peer networks, with groups of friends from middle school spreading out over large high schools and multiple classrooms. At the same time, students encounter many more teachers throughout their days and spend less time with these teachers. Eccles et al. (1991) conclude that the structure of most comprehensive high schools is contrary to what adolescents actually need, and their study reveals a decrease in positive relationships at a time when the need for those relationships is actually greater.

Roeser et al. (1999) see the root of these transition problems as the structure of most American high school rather than the social or developmental pressures endured by the ninth graders. Eccles et al. (1993) and Felner, Primavera, and Cauce (1981) blame the choppiness of the standard high school schedule for some transition problems; switching from one classroom to another, one teacher to another, and one subject to another incessantly throughout the school day prohibits students from establishing strong ties with their teachers and their peers. In addition, most high schools are larger, more bureaucratic buildings with higher teacher-student ratios and less personal contact between the adults in the school community and the adolescents. Roeser et al. (1999) state:

Peer networks can be disrupted by the size and educational stratification of these institutions; and they can lose status as they go from being the oldest in the

middle school to the youngest in the high school setting. For some, these changes can overtax their capacity to cope, thereby compromising academic and emotional functioning. (p. 141)

After failing to replicate these results in subsequent studies, Simmons, Carlton-Ford, and Blyth (1987) asserted that school size was linked to the achievement loss experienced at transition points and that larger schools had greater achievement loss than did smaller ones.

A loss of academic achievement is not the only result of the transition to ninth grade for many students. Simmons et al (1987) also found a decrease in students' self-esteem as they journeyed to high school. Because they are dealing with the social pressures of high school in combination with the increased academic pressure and extrinsic pressure from grade point averages and class ranks, some students begin to view themselves more negatively and exhibit a decrease in their intrinsic motivation to learn and succeed in high school (Mac Iver, 1990). Some researchers have found that this decrease in self-esteem is more pronounced in female students and African-Americans (Seidman, Allen, Aber, Mitchell, & Feinman, 1994). Felner, Ginter, and Primavera (1982) also hypothesized that students who lacked social support, such as minority and/or students from low socioeconomic backgrounds, had the most difficulty with the transition to high school. Students who deal with life-changing events such as the divorce of their parents, a move, or the death of a relative have an even higher risk of having problems with this transition (Simmons and Blyth, 1987).

Transition problems affect many students in many different ways. Perhaps the most disturbing outcome of these transition problems is an increase in dropout rates. The

report entitled “The Education Pipeline in the United States 1970-2000” (Haney et al., 2004) details the alarming dropout rates across the country, and in an examination of state-reported enrollment data, the report states that the problem is worsening, with the number of ninth graders who were not promoted to tenth grade tripling in the last three decades of the 20<sup>th</sup> century. Many students who end up dropping out at some point during their high school career first began having academic or social trouble in their ninth grade year. According to their research, Neild, Stoner-Eby, and Furstenberg (2004) found that first-time freshmen in Philadelphia who repeat ninth grade have a greatly elevated risk of dropping out of school within four years; in fact, 57 percent of those retained in ninth grade failed to graduate. Despite controlling for pre-high school factors and existing conditions such as demographic and family background, middle school performance, and pre-high school attitudes and ambitions, a poor ninth grade experience greatly increased the probability that a student will drop out (Neild et al., 2004).

Alsbaugh (2000) compared the dropout rates of students in different grade configurations and found that students who make multiple transitions between fifth and tenth grade dropout of high school at higher rates. He also found that boys drop out at a higher rate than girls, while students who attended K-8 schools and made only one transition from elementary school to high school had the lowest dropout rates. Anderson (1997) has found similar problems with transition and retention in Chicago. Her research cites that more than 40 percent of Chicago freshmen fail at least one major subject. Schiller (1999) sees the move from a familiar educational setting to a new setting with expanded social opportunities (particularly with several smaller middle schools combine into a larger, comprehensive high school) as the culprit, while Anderson (1997) sees the

anonymity and complexity of large high schools as factors leading to transition problems. Neild et al. (2004) state that there are “specific points where degree completion hangs in the balance, [and] difficulty in navigating of these treacherous waters, even for individuals who looked similar in other respects at the time of entrance to high school, substantially increases the probability of leaving high school without ever finishing” (p. 30).

Overall, students making the transition from eighth to ninth grade often see a decline in their self-esteem and an increase in their need for strong social relationships. They need to have a positive view of school and of education in general to do well, and they need to become full participants in the school and share in its mission and culture. Unfortunately, those who do not cope well with this dramatic transition and who become disengaged from their high school during their freshman year often do not reach graduation; as many as 6% of America’s high school students dropout before the end of their tenth grade year (Owings & Peng, 1992). An even more disturbing statistic is that only 68% of students who begin their high school careers as ninth graders achieve a traditional high school diploma (Steinberg, 2002). Since much of students’ difficulty making the transition from smaller, more personalized middle school settings to larger, impersonal comprehensive high schools, many educators and administrators have responded to the transition dilemma by either establishing smaller high schools or small learning environments (SLC’s) within larger high schools.

### School Size, Small Schools and Small Learning Communities

As the statistics cited above clearly demonstrate, size is one major contributing



factor to the disengagement and eventual lack of success of any high school students. High schools are traditionally larger environments than middle and elementary schools. Hoffman (2003) reports that the average size of an elementary school in 2001-2002 was 441 students, compared to 612 students in middle schools and 753 students in high schools. Many American high schools have well over 1,000 students; several have populations over 3,000. In fact, more than 70 percent of high school students attend schools that exceed 1,000 students (Allen, 2002).

Cotton (1999) asserts that schools have been getting larger over the last sixty years and continue to do so even today. Even though the population of the United States has increased by almost 75% since 1940, the number of elementary schools has dramatically fallen off, from close to 200,000 in the early 1940's to 62,037 in 1990 (Cotton, 1999). As a result of this reduction, the average number of students per school has risen dramatically from 127 to 653 during that same time period. In the 1950's, "bigger is better" was the running theory in high school management as district administrators saw larger, comprehensive high schools as an efficient model for education. In his 1959 book, *The American High School Today*, James Conant argued that high schools had to have at least 100 per graduating class in order to be cost effective and to offer a wide range of necessary programs; he went on to argue that the small high school was the number one problem in education and that educators and policy makers should make high school consolidation a top priority (Conant, 1959). Not only did Conant believe that large schools were cost effective, but he also argued that large, comprehensive high schools were better able to offer students a wide, varied curriculum and greater opportunities for extracurricular activity (Muir, 2001). Even though the large

schools Conant was advocating for consisted of 400-500 students, the comprehensive high school has grown substantially since the 1950's, and high schools with 2,000 to 4,000 are now commonplace throughout the country.

With their faith in the Conant report, district officials continued the consolidation of high schools vigorously and without question into the 1960's. The first research on the impact of these large, comprehensive high schools was completed by Barker and Gump in their 1964 book, *Big School, Small School: High School Size and Student Behavior* (Cotton, 1999). In their study, they found that high school students take part in a greater number of extracurricular activities and are more apt to hold leadership positions in those extracurricular activities in a small school than they would in a large school (Barker and Gump, 1964, as cited in Cotton, 1999). In her review of pertinent research on school size, Kathleen Cotton (1999) summarizes the many advantages that small schools or schooling units have. Small learning environments necessitate greater extracurricular involvement (which improves school engagement); exhibit closer, more caring peer-peer relationships and peer-faculty relationships; display higher levels of parent involvement; show a greater personal efficacy among both students and staff; use more personalized learning activities; have more flexible schedules; and are more apt to employ innovations such as cooperative learning, teaming and interdisciplinary education (Cotton, 1999).

As schools increase in size and population, many decrease in the amount of personal care they can give to each of their students, and the result is that more and more students are becoming disengaged from their schools. Newman (1992) points out that this lack of attention and personal care results in feelings of alienation and reduces a student's engagement in his or her academic work. To summarize these findings, Vander

Ark (2002) states:

Our schools are not failing – they are obsolete. They foster anonymity and stifle learning by systematically inhibiting those things that are most important: powerful sustained relationships, students' ability to address complex problems individually and as members of a team and to communicate in various ways; and the ability of teachers and administrators to take on increasing responsibility. (p. 56)

Raywid (1996) researched this trend toward larger learning communities, and her research has shown that this trend toward larger schools is a dangerous one. She reports that students who attend small high schools generally have higher achievement, graduate more often, and dropout less frequently. Raywid (1999) also affirms that students, parents and teachers have better perceptions of small schools and feel greater satisfaction. Students in smaller schools and smaller learning communities have more one-on-one attention from their teachers, more supervision, and more opportunity to get involved in school activities. They also experience fewer discipline problems than larger schools (Wasley et al., 2000). While some school districts who are considering new building projects may be able to use this research in their decisions to build smaller high schools, most principals and superintendents cannot immediately change their physical school buildings to make schools smaller. Therefore, a more feasible option is the establishment of small learning communities (SLC's) within larger comprehensive high schools.

Much of the SLC movement of the 1990's and 2000's stems from TheodoreSizer's *Horace's Compromise* (1984). Sizer documents the significant findings of the five year *Study of High Schools* in which he and a team of investigators visited hundreds

of schools from multifaceted communities; this team interviewed students, parents, teachers and administrators and conducted observations of the students' experiences in these schools (Sizer, 1984). What the team found were large, bureaucratic schools whose structure and philosophies negatively impacted the students' ability to learn effectively. While Sizer documents problems that run from the negative impact of the 50-minute class period to the overemphasis of school sports, one important observation was that large, bureaucratic schools were impersonal, and students in these schools failed to create close relationships with teachers that could facilitate better learning. Sizer's publication of *Horace's Compromise* led to the creation of the Coalition for Essential Schools, a reform organization committed to creating schools with structures that facilitate close peer-peer and student-teacher relationships and that are characterized by personalized learning environments.

In response to both the dismal performance of high school students in her Harlem schools and Sizer's research, Deborah Meier began to break the large schools in East Harlem's District 4 into smaller schools within large buildings; when her reform effort was completed, 52 schools existed where there were only 20 before (Meier, 1997). Despite the fact that over 50% of her students were on the free and reduced lunch program, the graduation rate from these schools was 90% compared to the citywide average of on 55% (Mitchell, 2000). In the two decades following the publication of *Horace's Compromise* and the success of Meier's small schools within former large school buildings, funding sources such as the U.S. Department of Education, the Annenberg Challenge, the Pew Charitable Trust, the Annie E. Casey Foundation, the Carnegie Corporation, and the Bill and Melinda Gates Foundation led to the creation of

smaller schools and SLC's throughout the United States.

Cotton (2001) defines SLC's as "any separately defined, individualized learning unit within a larger school setting...[in which] students and teachers are scheduled together and frequently have a common area of the school in which to hold most or all of their classes" (p. 7). SLC's go by other names as well; in different schools and districts, SLC's are also called schools-within-a-school (SWAS), schools-within-a-building (SWAB), clusters, pods, academies, or houses (Cotton, 2001). Raywid (1998) asserts that the term SLC can be confusing because it can apply to so many types of organized structures within a school building with significantly varying degrees of autonomy and individuality. However, for the purposes of this paper, the above definition specifies that a SLC is contained within the structure of a larger school setting and is an individualized learning unit – those are the key aspects of most learning communities that have produced results.

While the results of SLC's have differed depending on the type of school (rural, urban, suburban) and the type of SLC (SWAS, pod, career academy, etc.), many share common positive results. A few of those positive results are specified in the following paragraphs.

### *Achievement*

McAndrews, et al. (2002) reports that the average national dropout rate for high schools with more than 1,000 students is 6.39%; the same rate for schools of fewer than 200 students is 3.47%. Therefore, size may correlate with graduation rates, and the statistics may indicate that in smaller learning communities students graduate at higher

rates than in large high schools. The United States Department of Education's *New American High Schools* interim report entitled *Aiming High: Strategies to promote high standards in high schools* (1999) explains this positive impact on student achievement:

When learning environments are smaller and more intimate, teachers and students can more easily get acquainted; teachers can spend more time with individual students; and students seem to benefit from the sense of belonging to a community. Grouping teachers and students into more cohesive, family-like structures also makes it easier to create opportunities for students to apply skills to real problems, to make connections between classroom activity and work, and to integrate learning across disciplines. (p. 21)

Vander Ark (2002) reiterates this by affirming that the close relationships between teachers and students are the most important attributes of SLC's. With smaller classes and more intimate relationships with teachers, students in SLC's often simply do better. McComb (2000) found that test scores in smaller schools were consistently higher than those in traditional large schools. With lower teacher-student ratios and more personal contact, students feel greater accountability.

#### *Reduction in the Achievement Gap*

Several studies have shown that minority students have a much greater success rate in SLC's, and the effects of smallness are greater for minority students than they are for affluent white students (Gladden, 1998; Howley, Strange, & Bickle, 2000).

### *School Safety*

The same student-adult relationships that help students stay engaged in school also help them behave. Small schools and SLC's report lower rates of discipline referrals than large schools. Wasley et al. (2000) wrote that "the most horrifying recent development in large schools is the increase of violence" (p. 2). In the wake of the school shootings such as the tragedy in Columbine, CO, researchers have theorized that the size and impersonal nature of comprehensive high schools has contributed to the proliferation of school shooting over the last decade. Cotton (1996) asserts that while these comprehensive high schools do not negatively impact the academic achievement of affluent, white students as much as minority students, they do have some part in creating more dangerous and potentially violent schools. Raywid and Oshiyama (2000) claim that school shooting and other episodes of school violence are much less likely to occur in small school settings, and Gladden (1998) notes that SLC's have significant lower levels of drug use, violence, suspensions, and expulsions.

### *Attendance/Retention*

Cotton (1996) found that students in SLC's have better attendance and drop out less frequently than peers in traditional high schools. Gladden (1998) also found that students in SLC's and small schools are better able to acquire credits and complete high school in a timely manner.

### *Extracurricular Participation*

Students who attend small high schools or SLC's participate more often in extracurricular activities and often hold more important leadership positions within those activities (Cotton, 1996; Raywid, 1996; Gladden, 1998).

### *Teacher Satisfaction*

Teachers in SLC's often feel as though they have more of an impact both on the students and on the decision-making within the school. They report fewer discipline problems, closer relationships with colleagues and students, and an improved capacity to individualize instruction for struggling students (Cotton, 2001; Gladden, 1998; Wasley et al., 2000). In addition, Wasley et al. compared the attitudes of teachers in small schools and large schools in Chicago and found that the teachers in the small schools were much more satisfied with their jobs and were much more willing to collaborate with colleagues and engage in professional development opportunities.

### *Cost*

As schools grow in size, they often need more administrators, which increases the overall cost of the education (McAndrews & Anderson, 2002). Lawton (as cited in McAndrews & Anderson, 2002), also asserts that the "cost of learning per unit is higher in larger schools as a result of their often less favorable academic outcomes" (p. 3). In other words, SLC's and schools within schools get higher academic achievement at a lower cost overall – they may cost slightly more up front, but they achieve better results



and eliminate or greatly reduce the need for alternative schooling or remediation when students fail.

Over the last decade and a half, the trend toward large schools, begun by Conant's report in 1959, has come to a halt. With the passage of No Child Left Behind in 2000, districts across the nation are in a rapid pursuit to reform in ways that positively affect student engagement and achievement. Many are moving toward smaller schools or smaller learning communities. However, schools are not alone in this quest; in fact, colleges and universities have been battling many of the same problems for decades and are at least a decade ahead in the move toward smaller learning communities.

### Collegiate Freshman Programs

Before freshman academies began to appear on high school campuses across the country, colleges and universities were experimenting with alternative ways to deliver curriculum and to engage freshman on their campuses. Until the 1970's, college campuses employed the practice of "sink or swim" for their freshman students. In the minds of university administrators, those students who successfully negotiated the transition from high school to college and survived their first year with a solid grade point average were worthy of study at the collegiate level. Those students who had adjustment problems, who struggled academically, and who did not display adequate persistence to continue through four years of study just did not have what it took to be a college graduate. The result of this philosophy was a first-year college attrition rate around 24% and a college completion rate averaging around 55% six years after students began their college careers (Seidman et al, 1996).

College retention rates have not improved in subsequent years. Collecting data over more than two decades, the American College Testing program, or ACT, has found that college retention rates have held fairly steady, with five year graduation rates between 50.9% and 54.6%; in 2003, the rate was 51.6% (ACT, 2004). Two year college retention rates are even worse, with rates as high as 44.0% and as low as 34.3% (ACT, 2004). The Consortium for Student Retention Data Exchange (1999) has also found that the large majority of students who do not continue their college education withdraw between their first and second years. In a study of 269 colleges, 20% of students dropped out in their first year, 11% withdrew in their sophomore year, and only 9% dropped out in subsequent years (Consortium for Student Retention Data Exchange, 1999).

These dismal statistics led several researchers to begin studying college retention in the 1970's, and their resulting theories changed the perspective on retention and attrition of many university professors and administrators and paved the way for colleges to design and implement freshman programs in the 1980's and 1990's.

Spady (1970) was one of the earliest researchers to attempt to understand college retention from a sociological rather than an individual perspective. Drawing on the work of Durkheim (1951) in the realm of suicide, Spady utilized Durkheim's view that a person who commits suicide essentially removes himself from the society in which he lives. Spady proposed that college dropouts were acting in a similar manner and were essentially withdrawing from a society in which they did not fit. Spady borrowed Durkheim's theory of societal integration and proposed that students needed to fit into both the academic and social constructs of their selected college in order to be successful. In other words, they had to do well academically and make friends. Those students who

failed at one or the other or both would be susceptible to dropping out (Spady, 1970).

Expanding on Spady's work, Tinto's (1993) theory of social integration and student departure is the basis for much of the research on student retention over the past three decades. In his longitudinal study, Tinto analyzed the interaction between a student's background (educational, family, skill attainment) and career and educational goals and the institutional experiences with which he is faced during his first year of college. Tinto found that the degree to which a student's family background, preparation, pre-existing goals and commitments become integrated with the external community of the college indicates that student's chance for success. Tinto argued that both the formal academic experiences and the informal social experiences of an institution play a part in a students' integration into the college experience; therefore, there is more impacting a student's college persistence than just what is happening in the classroom. He argued that college administrators must also look at "the actions of various actors in the collegiate environment, such as students, faculty and staff" (Tinto, 1993, p. 122) when analyzing issues of student retention.

Astin (1975, 1984) conducted a longitudinal study on 24,847 students at 309 different colleges to determine the institutional characteristics that positively and negatively impacted a student's undergraduate education and persistence in achieving a degree. He founds that the strength of the connections that students, particularly freshman, made with both their professors and with their peers had a tremendous impact on students' grade-point averages during their first year of college and ultimately, on their degree completion rates (Astin, 1993). He also found that students at smaller institutions and at institutions with lower student/faculty ratios reported better satisfaction

with their college's instruction and a greater number of students enrolled in graduate school (Astin, 1993). However, his most important findings led to the development of his theory of student involvement, a theory that has been central to the development of freshman programs for over two decades. Student involvement "refers to the quantity and quality of the physical and psychological energy that students invest in the college experience" (Astin, 1999, p. 307). Astin proposed that the more involved a student was in academic work, extracurricular activities, and relationships with fellow students, professors, and administrators, the more he would learn and grow as an individual, and the more likely he would be to achieve a college degree. Likewise, traits that often increased a student's chances of dropping out took away from these three factors of student involvement; factors such as off-campus living, living at home, working full-time, attending part-time, or watching large amounts of television led to "noninvolvement" and increased a student's risk for dropping out (Astin, 1999, p. 307).

Until his work, many college professors and administrators were primarily concerned with their content and resources; Astin's work changed their focus so that more attention was paid to the motivation, behavior, and emotional well-being of the student. Astin (1993) posited that his findings required that "...institutions rethink traditional ways of structuring collegiate learning environments and find new ways of actively involving students, as well as faculty, in their intellectual life. It requires a deeper understanding of the importance of educational community to the goals of higher education" (p. 212).

Kuh (2007) has been researching the effect of student engagement on both retention rates and academic achievement. Through his work with the National Survey of

Student Engagement (NSSE), Kuh has shown that students who spend large amounts of time and energy in preparing for classes and in other “educationally purposeful activities” show greater achievement and persistence at the post-secondary level (Kuh, 2003, p. B12). Terenzini, Pascarella, and Blimling (1999) found that student engagement in campus activities that do not necessarily have an educational or academic focus still have a positive impact on academic success and persistence. Activities such as intramural or interscholastic sports, residence hall living, participation in fraternities and sororities, and other extracurricular activities showed a positive correlation to increased grades and improved attitudes toward learning. They also reaffirmed many of Astin’s assertions that faculty-student interactions and peer-peer interactions also positively impacted student academic performance (Terenzini et al. 1999). As college administrators pondered the results of all of these studies from the past several decades, they arrived at one possible solution that would provide support for freshman, aid in their transition, help to integrate them, and get them involved in campus life and academics: the learning community.

While learning communities are emerging in both high schools and colleges throughout the nation, the notion of a learning community is not new. In 1927, Alexander Meiklejohn coined the term and created the first learning community called the Experimental College at the University of Wisconsin (Smith, 2003). Concerned over the increasing departmentalism and separation between departments and the corresponding erosion of the social networks of learning on campus, Meiklejohn created a two-year interdisciplinary program that stressed active learning and collaboration and would give freshmen and sophomores a solid foundation for their specialized studies in subsequent years (Smith, 2003).

Likewise, freshman seminars or “experiences” are not new either. In 1911, the Carnegie Foundation issued a plea for colleges to focus on helping freshman to negotiate their first year of college, and in that same year, one of the first freshman seminars appeared at Reed College in Portland, Oregon and focused on orientating the students to all aspects of college life (Gardner, 1986). Amherst College initiated a freshman seminar two years later, and Brown University began a similar program in 1915 (Gardner, 1986). From that time until shortly after World War II, freshman seminars and courses were created at dozens of institutions across the United States; however, there was tremendous pushback from university professors who prized their content areas and saw courses that focused solely on helping students adjust to college as trivial and non-academic (Caple, 1964). Bowing to pressure from these professors, the large majority of freshman seminars were cut by the 1960’s (Caple, 1964).

In response to Tinto’s and Astin’s research, colleges refocused on the freshman dilemma in the 1970’s, and through these initiatives, the “First Year Experience” was born. One of the first and most influential programs originated at the University of South Carolina and was and still is aptly named, “University 101.” According to the program’s website, this freshman experience was created in response to a tumultuous two-year period of civil and social unrest on the campus of South Carolina. The years 1970 and 1971 were marked by riots and protests stemming from racial unrest and the Vietnam War ([www.sc.edu/univ101](http://www.sc.edu/univ101)). University 101’s main aims are to “build trust, open communication lines, encourage students to develop more positive attitudes, and increase retention between the freshman and sophomore years” ([www.sc.edu/univ101](http://www.sc.edu/univ101)). Students take courses that introduce them to campus life, issues involving college

students, and successful study strategies. This program also bridges the gap between the academic world and student services to fully integrate students into campus life. This program continues to operate on the University of South Carolina campus, and it has spawned the National Resource Center for the First-Year Experience and Students in Transition.

Since the early 1980's, hundreds of college and universities have created small learning communities. There are now well over 500 collegiate first-year experience programs in which students take two or more courses as a group (Smith, 2003), and while many of these programs have the same focus, they look very different. Four main models exist: linked courses, cohort clusters, freshman interest groups, and coordinated studies. In the most basic first-year programs, colleges offer two freshman courses that are linked together and must be taken as a unit. The courses are usually taught separately but are interdisciplinary in nature and may offer conjoined assignments. Cohort clusters take the idea of the linked courses, sometimes join four or more courses together and centering them on a common theme. Students move through these courses as a cohort. Freshman interest groups are small learning cohorts that enroll in a sequence of courses; often these interest groups bridge the gap between the academic and the social aspects of the college experience and participate in social events as a cohort. In a coordinated studies program, professors team together to deliver content from a variety of disciplines during a common block of time. In all four of these cases, the objective is to break the students into small learning communities within the larger campus environment (Hoffman et al., 2002).

The following four colleges and universities are among the hundreds of schools that have created First-Year programs over the last two decades. Like the University of

South Carolina, Olivet College in Michigan created their first-year academy, entitled the "Olivet Plan," in response to racial unrest and expanding multiculturalism on campus in the early 1990's (Walters, 2003). This program consists of a freshman seminar, a portfolio assessment program linked to a faculty advisor, *small learning communities* for first year students, and service learning (Walters, 2003). Focused on constructivist learning and a deliberate merging of academic and co-curricular components, Olivet College has recorded a positive impact of this program on student learning outcomes and student connectivity with campus life (Walters, 2003).

The University of Rhode Island began to focus on the freshman experience with a first-year seminar called URI 101: Traditions and Transformations in 1995; however, this course did not lead to success in meeting the academic objectives that administrators had for the program (Hoffman, Richmond, Morrow, & Salmone, 2002). In 1997, this freshman course was linked to small learning communities of no more than 25 students; the URI 101 anchored these learning communities and allowed the students in each learning community to take three or four of their freshman courses together. Subsequent studies showed that this type of first-year experience positively impacted student persistence, academic outcomes, peer-peer relationships, and student-faculty relationships (Hoffman et al., 2002).

Northern Michigan University has blocked its freshman seminar, UN 100, with three other classes and tied these seminars to specific majors so that cohorts of 20-25 students either sharing a major or declining to declare a major work together through their first semester of courses. The focus of this program is on teamwork and building a learning community, and students are supported academically and socially throughout the



experience (Soldner, Lee, and Duby, 1999). Administrators at NMU found over 10% more students in the first-year program remained in Academic Clear Standing than students not in the first-year experience. After the first semester, that statistic remained at almost 8%. In addition, over 91% of students in the program persisted into their sophomore year as opposed to 87.5% of students not in the program. Extending that to the fifth semester, over 2% more students from the program were retained at NMU (Soldner, Lee and Duby, 1999). While not statistically significant, this finding remains consistent with other retention studies from across the nation.

ESSENCE (Entering Students at South Engaging in New College Experiences) is a first-year experience begun in 1998 at the University of South Alabama. This program combines residence hall living with many of the features discussed in the three previously described programs. ESSENCE has a freshman seminar that includes topics such as exam preparation, study skills, college-level writing, and career advising. The students in this program live in one of two dormitories reserved exclusively for the students in the ESSENCE program, and on each hall, there is a peer advisor, a student who is at least a sophomore and who has been trained to help freshman negotiate the common pitfalls of the first year of college (Noble, Flynn, Lee, & Hilton, 2007). Noble et al.(2007) have asserted that while living on campus is, by itself, a help to the academic performance of first-year students, the addition of the ESSENCE program to residence hall living has a statistically significant positive impact on grade point averages and four- and five-year graduation rates. They also found that this positive correlation existed for both men and women and existed for white, black and Asian students equally (Noble et al., 2007).

Overall, first-year experience programs on the collegiate level increase student

persistence and retention, and those students who take part in these programs typically graduate at a higher rate than non-participants (Schnell, Seashore, & Doetkott, 2003). This even holds true for those students who enter college with lower standardized test scores or less preparation. Tinto (1993) asserts that these programs also increase student achievement. With the research on the college level showing that programs that help students to integrate into the college experience and become engaged in both the academic and social aspects of postsecondary life are effective and accomplish their objectives, many high school reformers began to hypothesize that the same can be accomplished with transition programs that bridge eighth and ninth grade. Over the last ten years, many high schools across the country have created freshman academies, using both the research on small learning communities and on university programs as their foundation.

### Freshman Academies in Progress

Freshman academies are schools-within-schools in which ninth grade students are isolated in one part of the building for most or all of the school day. The teachers in the academy solely teach freshman, and the major classes, lunch, and most electives are homogeneously grouped in terms of grade. Freshman academies have their own administrator and often their own part or wing of the building. However, being a part of the larger high school is an important attribute of the freshman academy; ninth grade students can access some of the high school facilities and can usually take one or two heterogeneously grouped electives. In addition, the ninth graders can join clubs, athletic teams, drama clubs and the marching band. They can also attend dances and co-

curricular activities and take an active part in the social aspects of high school once the school day has ended. Other important components of ninth grade academies include core curricula, integrated curricula, after-school academic programs such as homework centers or tutoring sessions, and alternative scheduling to expand time in core classes.

While freshman academies are fairly new to the education scene, the initial research on these small learning communities is positive. The Transition Project at Yale University was the first major study of the effect of the isolation of ninth graders on academic achievement (Felner et al., 1981). This study of three early freshman programs conclusively showed that the programs that would later be called freshman academies produced higher grade point averages than comprehensive high schools without freshman academies. Since then, many similar programs have been created throughout the United States. Newton-Reents (2002) highlights the successes of several ninth grade academies in Houston and Rochester. Administrators from each of the three districts report lower dropout rates, a heightened sense of community, stronger student engagement, and more student involvement in school-related activities. According to Newton-Reents (2002), schools with “full-blown transition programs” had only an 8% dropout rate compared to a 24% dropout rate for those schools without freshman academies (p. 15).

In their article, “Where Everybody Knows Your Name,” Holland and Mazzoli (2001) highlight the challenges and successes of the Gladston (a pseudonym for a Midwestern city) School District’s creation of a freshman academy. This academy was founded on the premise that students would thrive in high school if they had closer relationships with teachers:

In the words of Program Leader Janey Lewis, the academy was to be ‘a place

where everybody knows your name' – or more precisely, a place where everybody knows your business: who your friends are, how well you are performing in English class, and whether you ate supper the night before.

(Holland & Mazzoli, 2001, p. 296)

This particular freshman academy seemed to accomplish just that in its pilot year:

Part of the reason is that, with no more than 175 students in attendance...the freshman academy was small enough to feel close-knit. Absent students were noticed and missed...[and] teachers also moved beyond traditional classroom duties by calling students' parents, visiting students at home, working with them after school, and counseling them throughout the day, trying any strategy they could think of to overcome the indifference that drives students to dropout, or figuratively check out, of school. (Holland & Mazzoli, 2001, p. 298)

Overall, students at the Gladston freshman academy felt a deeper connection with the school, had closer relationships with teachers, and perceived school much more positively than their counterparts at traditional comprehensive high schools.

Other schools around the country are experimenting with Freshman Academies, and they are achieving similar results. Houston County High School in Georgia created a freshman academy called High School 101 when over 60% of the discipline referrals received by the main office in the span of a year were from ninth graders. Since its implementation, ninth grade discipline referrals are down 55% and grade retentions have decreased 46% (Chmelynski, 2004).

Johns Hopkins University used freshman academies as a component of its Talent Development High School reform effort in urban high schools. The first school included

in this reform project was Patterson High School located in Baltimore, MD. In the first year of the freshman academy at Patterson, attendance rates increased nearly ten percent, from 65.6% to 73.5%, This is significantly higher than the 66.3% average daily attendance rate at the rest of Baltimore's non-selective public high schools (Legters & Morrison, 1998). More importantly, the promotion rates for ninth graders rose dramatically from just 15% in 1994 to 85% in 1996 (Legters & Morrison, 1998). Using the Talent Development Model, the School District of Philadelphia has also seen staggering improvements, specifically in the area of ninth grade transition. Since the implementation of freshman academies at 54 high schools in Philadelphia, suspensions have decreased by 41% and student arrests have decreased by over 50% (Chmelynski, 2004).

Dudley High School in North Carolina began its freshman academy in 1999 with only 100 students, but the academy produced such positive results in terms of decreased retention and discipline issues and increased student achievement that all of the Dudley students are now required to take part in the academy. Muhlenberg South High School in Greenville, KY has seen the same benefits of the freshman academy that other high schools listed above have noted: increased attendance, decreased retention, and decreased discipline rates. However, Muhlenberg South administrators have also seen a dramatic increase in standardized math scores since the program's implementation. On a norm-referenced skills test during the first year of the academy, scores on the math computation section rose 19 percentile points from the 33<sup>rd</sup> percentile to the 52<sup>nd</sup> percentile (Clark and Hunley, 2007).

### Summary

This body of research makes several powerful assertions that are central to this research study. First, ninth grade is an extremely challenging year for most American high school students for a variety of development, social, and academic reasons. Second, students who are engaged in their schooling and who have a positive perception of their school perform better than those who are disengaged and disconnected from their school. Third, small learning communities help to keep students engaged by providing closer relationships with teachers and other students, allowing them to feel more comfortable in their academic setting, eliminating social distractions that take their minds off of their schoolwork, and providing them with more opportunities to become involved in school-related activities. Finally, several freshman academies, on both the collegiate and secondary levels, have met with success in keeping students engaged, improving student achievement, and decreasing dropout rates for those high school students who have experienced them.

## CHAPTER III

### METHODOLOGY

#### Introduction

The purpose of this study was to examine the impact of a freshman academy on attendance rates, discipline referral rates, social studies achievement, language arts achievement, credits earned, failure rates, and grade point averages for freshman at Springfield High School. The data was examined to determine whether the freshman academy, which was instituted during the 2006-2007 school year, has had a significant impact on ninth grade students' achievement and engagement as was intended at its inception. To determine this, data was collected from the ninth grade class of the 2005-2006 school year (the year before the inception of the freshman academy), the first ninth grade class to experience the freshman academy during the 2006-2007 school year, and the second ninth grade class to experience the academy in the 2007-2008 school year. For the purposes of this study, the ninth grade class from the 2005-2006 school year will be referred to as Cohort 1 (control group), the ninth grade class from the 2006-2007 school year will be referred to as Cohort 2 (comparison group 1, freshman academy only), and the ninth grade class from the 2007-2008 school year will be referred to as Cohort 3 (comparison group 2, freshman academy and laptop initiative).

#### Description of the Freshman Academy

Springfield High School, located in Delaware County, Pennsylvania, is a 1,200-

student high school about nine miles west of Philadelphia. The students come from mostly white, middle class homes, although the population of minority students, particularly African-Americans and Asians, is slowly rising. Bridget Kelly, EdD., the former principal of Springfield High School, was becoming increasingly dissatisfied with the freshman experience and with the statistics coming from each new freshman class. The impetus for the creation of the freshman academy was the large failure rate for ninth grade students entering this comprehensive high school. In 2004-05, Dr. Kelly began to research reforms in other districts to aid the transition of the Springfield High School freshman, and in the 2006-2007 school year, the freshman academy "school-within-a-school" opened its doors on the second floor of the high school building.

The program is mandatory for all freshmen entering Springfield High School, and it takes up most of the second floor of the building. The freshman academy was designed to help incoming ninth graders feel more comfortable and less intimidated by the high school environment. The program has several main components. First, the freshman academy is located in one corridor of the building. Students spend the majority of their school day along the front corridor on the second floor, and they only leave this section of the building to go to an elective located in another section of the building. Students take most of their major subjects (English, math, social studies, and science) within the academy, although some higher level students take accelerated math courses with upperclassmen. Second, the ten teachers in the freshman academy teach only ninth grade classes and share a common planning time during fourth block. The teachers use this planning time to collaborate with fellow freshman academy colleagues and to discuss individual students' progress and needs. Third, all ninth graders take three elective



classes designed to help them get the most out of their high school career and help them make plans for life after high school. *Skills and Perceptions* is a course based on Covey's *Seven Habits of Highly Effective Teenagers* and is designed to help students with organization, study habits, and social networking. *Future Planning* gives students insight into the multiple college and career paths available to them after high school and helps students formulate goals and a path to achieve those goals. *Writing and Research* introduces students to the expectations for writing on the high school level and introduces students to the concept of the research paper. Fourth, the freshman academy provides several extracurricular activities throughout the school year. Consisting of team-building exercises, cultural field trips, and class meetings, these activities are meant to connect students to their school and create a positive culture within the freshman academy. Fifth, several staff members throughout the school work solely with the freshman academy; there is a designated guidance counselor and assistant principal who work closely with freshman and the academy teachers. Finally, each student within the freshman academy has an advisor and spends 20 minutes each day in advisory. This advisory system, which is the only piece of the freshman academy that existed before the academy began, is meant to help students form a close bond with at least one adult on campus. Advisors help students with academic and social matters and give advice on scheduling. Because this component was in place before the academy began, it was not considered part of the comparison for the purposes of this study. Essentially, this study tested all of the components of the freshman academy with the exception of this one.

In the 2007-2008 school year, the academy was supplemented with a one-to-one laptop program in which each student within the freshman academy received an IBM

laptop for use during the school day and at home in the evenings. Teachers within the freshman academy were specially trained to teach in classrooms in which every student had a laptop, and a wireless network and interactive white boards were installed in the freshman academy rooms. For the 2007-2008 school year, this initiative was only implemented for the freshman and sophomore classes.

### Study Design

This study utilized a quantitative, casual-comparative research design. This is a modified version of the recurrent institutional design described by Campbell and Stanley (1963) in *Experimental and quasi-experimental designs for research* (p. 57). Because the data that was utilized was pre-existing, historical data, the study can be classified as quasi-experimental. All of the data used was pre-existing data archived by the school district from the 2005-2006 school year, the 2006-2007 school year, and the 2007-2008 school year. There were three cohorts of students included in this quasi-experimental design. Cohort 1 consisted of 297 students who entered the ninth grade at the beginning of the 2005-2006 school year. These students were the last class at Springfield High School to not experience the freshman academy. These students had also not been issued laptops during their tenure at Springfield High School. Since these students had not experienced either initiative, they were considered a control group for the first four research questions. Cohort 2 consisted of 300 students who entered the ninth grade at the beginning of the 2006-2007 school year and served as the inaugural class of Springfield's freshman academy. These students did not experience the freshman academy with laptops but were issued laptops for the duration of their sophomore year in the 2007-2008

school year. Hence, they were considered a comparison group for the first four research questions but were the control group for the fifth research question involving the laptop program. Finally, Cohort 3 consisted of 297 students who entered Springfield High School as ninth graders at the beginning of the 2007-2008 school year. These students experienced the freshman academy and were issued laptops in November of their freshman year. Because they experienced both initiatives, they were considered the comparison group for the final research question in this study.

Within each cohort, two sets of subgroups were differentiated further based on gender and special education designation. Gender (male/female) was one basis for subgroup identification, and curriculum designation (special education/regular education) was the other subgroup. The difference in overall group performance in each of the criterion variables for male and female and special education and regular education students was examined in Cohorts 1 and 2.

### Population

The population for this study included all first-time freshmen at Springfield High School during the 2005-2006 school year, the 2006-2007 school year, and the 2007-2008 school year. Springfield High School is located in Springfield, Pennsylvania, approximately twelve miles southwest of Philadelphia in suburban Delaware County. Springfield Township is comprised of mostly middle class residents with a median income of \$65,700 and has a population of approximately 23,500 residents. Springfield Township is 96.58% white, 0.72% African American, 0.05% Native American, 1.97% Asian, 0.06% Hispanic, and 0.01% Pacific Islander. The borough of Morton, which lies

to the south of Springfield, also lies within the boundaries of the Springfield School District and sends its students to Springfield High School. Morton Borough is a small, racially diverse township with a population of 2,300. The racial makeup of the borough was 69.87% white, 24.46% African American, 0.07% Native American, 3.90% Asian, and 0.33% from other races. Springfield High School is the sole high school in Springfield School District, a district of approximately 3,400 students.

Springfield High School is a comprehensive high school that serves approximately 1,200 students in grades nine through twelve. In 2005, 86% of the graduating seniors went on to attend a two- or four-year college or university, 4% enrolled in technical schools, 2% joined the military, and 3% went directly into the workforce. Ninety-eight students were identified as gifted, and 148 students had diagnosed disabilities and received special education services. The school offers 17 advanced placement courses, and the district has been focused on raising the rigor of the high school courses and raising literacy levels from kindergarten to 12<sup>th</sup> grade.

#### Data Collection

To perform this study, the researcher collected data on each of the seven criterion variables for Cohorts 1, 2 and 3:

1. grade point averages
2. English grade point averages
3. social studies grade point averages
4. credits earned
5. failures

6. discipline referrals

7. attendance

In addition, data was collected after the tenth grade years of Cohorts 1 and 2. Generally, data on the same criterion variables was used to determine the longevity of the impact of the freshman academy. However, in the tenth grade data, tenth grade English grade point averages were substituted for ninth grade English grade point averages and tenth grade social studies grade point averages were substituted for ninth grade social studies grade point averages. Approval to collect this data was requested and granted by Dr. James Capolupo, the superintendent of Springfield School District and Mrs. Geraldine Sullivan, the president of the Board of School Directors (see Appendix A). Although this study involved human subjects, all data was anonymous and historical. Ms. Nicole Kissinger, director of information services, was responsible for the collection of the student data included in this study. She removed all names and identifiers from the student files and provided the researcher with anonymous data files. Generic student ID numbers were developed and implemented for use in this study. The study did not and will not identify any students by name or divulge the identity of any of the students included in this study.

### Hypotheses

The overarching hypothesis was that there was no significant difference between the comparison and control groups in two years of testing, controlling for gender and special education designation. If this hypothesis was rejected, student achievement and engagement could be increased with the introduction of freshman academies and one-to-one laptop initiatives.

The specific hypotheses, stemming from the research questions, are stated below. The research questions are listed first, in the same fashion that they were presented in Chapter I, for the reader to correlate with the hypotheses.

### Research Questions

1. What impact does a freshman academy have on student achievement and engagement as measured by grade point average, ninth grade English year-end grades, ninth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance?
2. Does gender mediate the impact of the freshman academy on student achievement and engagement as measured by grade point average, ninth grade English year-end grades, ninth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance?
3. Does special education identification mediate the impact of the freshman academy on student achievement and engagement as measured by grade point average, ninth grade English year-end grades, ninth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance?
4. What sustaining impact does a freshman academy have on student achievement and engagement over two years as measured by change between the criterion variables for ninth grade and tenth grade (grade point average, tenth grade English year-end grades, tenth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance at the conclusion of tenth grade)?

5. Does a one-to-one laptop program intensify the effects of the freshman program on student achievement and engagement as measured by grade point average, ninth grade English year-end grades, ninth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance?

### Individual Hypotheses

The null hypotheses derived from the research questions presented are:

1. At the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance.
2. Controlling for gender, at the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance.
3. Controlling for curriculum designation (special education or regular education), at the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance.

4. At the end of tenth grade, there are no significant differences between Cohorts 1 and 2 in change between the criterion variables for ninth grade and tenth grade (grade point average, tenth grade English year-end grades, tenth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance at the conclusion of tenth grade).
5. At the end of ninth grade, there is no significant difference between Cohort 2 (freshman academy, no laptops) and Cohort 3 (freshman academy, laptop program) in grade point average, ninth grade English year-end grades, ninth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance.

### Data Analysis

Hypotheses 1, 2, 3 and 5 were addressed using a multivariate analysis of variance (MANOVA). Hypothesis 4 was tested with a series of repeated measures ANOVAs. Similar to an ANOVA, a MANOVA determines a significant effect by looking at mean differences between groups for the criterion variable. The difference is that ANOVA compares a single mean for each group, whereas, MANOVA examines a vector of means for each group. Therefore, the null hypothesis for the MANOVA test is that the populations from which the groups are selected have the same means for all the criterion variables.

There are two main differences between MANOVAs and ANOVAs. First, MANOVAs are able to analyze several predictor variables and several criterion variables within the same model, while ANOVAs cannot. In doing this, there is a better chance of



discovering which factor among those being testing is truly important. Second, rather than solely using the F value as the indicator of significance, MANOVA uses a number of multivariate measures. Because of this difference, MANOVA requires larger differences between means to return a result of significant. The means effect sizes must be larger for MANOVA than for ANOVA. The purpose is to protect against Type 1 error. Thus, Type 2 error is actually higher in MANOVA than in ANOVA. While ANOVA is a more powerful model, MANOVA returns more precise results. In MANOVA, a statistical main effect of a predictor variable implies that the scores on the criterion variable of the predictor variable groups are significantly different. In SPSS, there are four multivariate measures: Wilk's lambda, Pillai's trace, Hotelling-Lawley trace, and Roy's largest root. This study used Pillai's trace in testing Hypotheses 1, 2, 3 and 5, for it is considered the most reliable of the multivariate measures and offers the greatest protection against Type I errors.

There are several assumptions that must be met when using MANOVA. The first assumption is that there is a multivariate normal distribution among the criterion variables. In a MANOVA, each criterion variable should be tested for normality, and if a variable is non-normal, it can be transformed for normality. Second, MANOVA assumes that there is equal variance/covariance across groups. Third, MANOVA assumes that the criterion variables exhibit sphericity. The criterion variables should be sufficiently correlated with each other to justify the conclusion that each one is a different component of a single construct. Fourth, MANOVA assumes homogeneity of variances across groups. In other words, the dispersion of variables from their respective means is equal for the groups being compared. Figure 1 shows the dispersion of variables for ninth

grade absences and displays that this criterion variable exhibits relatively equal levels of variance.

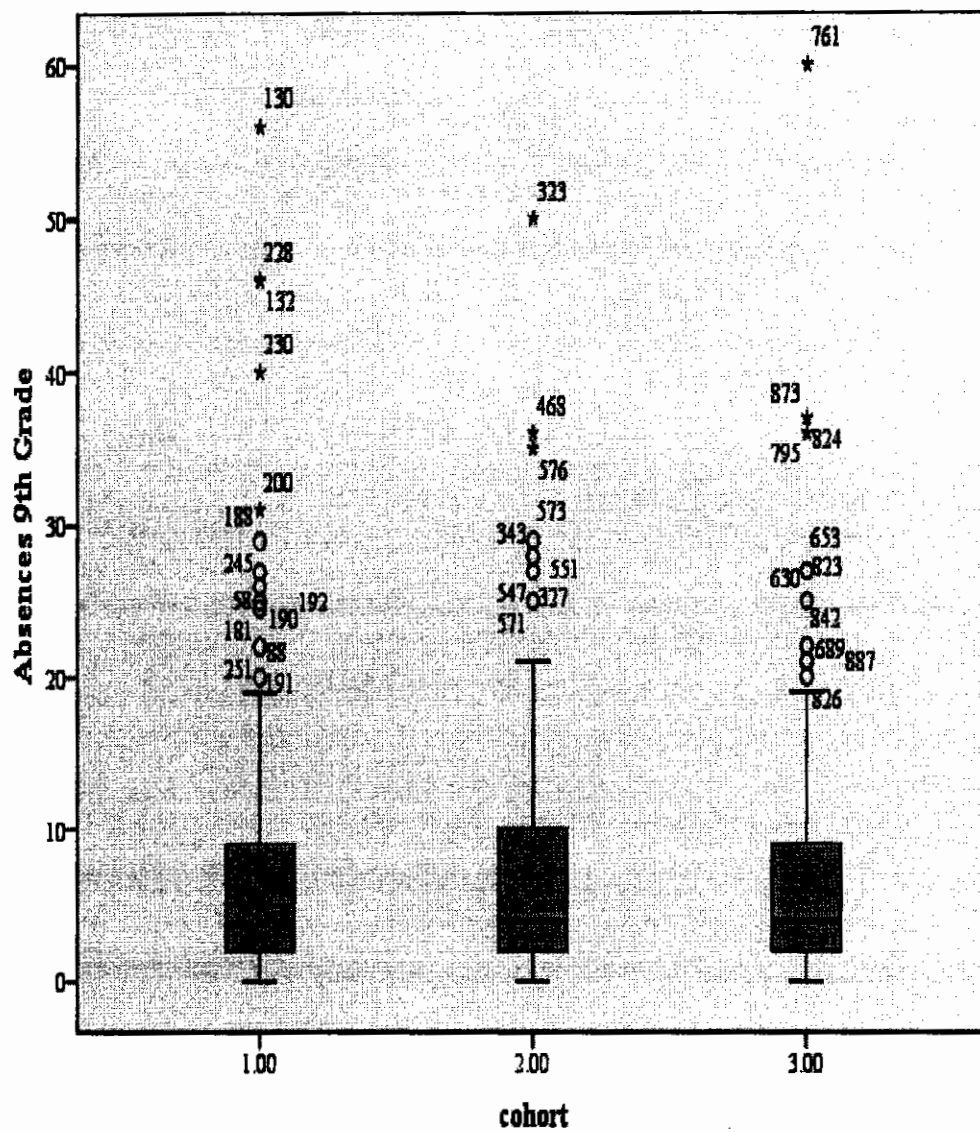


Figure 1. Dispersion of variables for ninth grade absences.

The fifth and final MANOVA assumption is that studentized residuals are normal and most have absolute value less than 3. In Figure 2, the *studentized residuals* for ninth grade GPAs, while not conforming to the normal curve perfectly, more or less conform to a standard curve and fall within the range of -3.0 and 3.0.

### Studentized Residual for gpa9 Model A

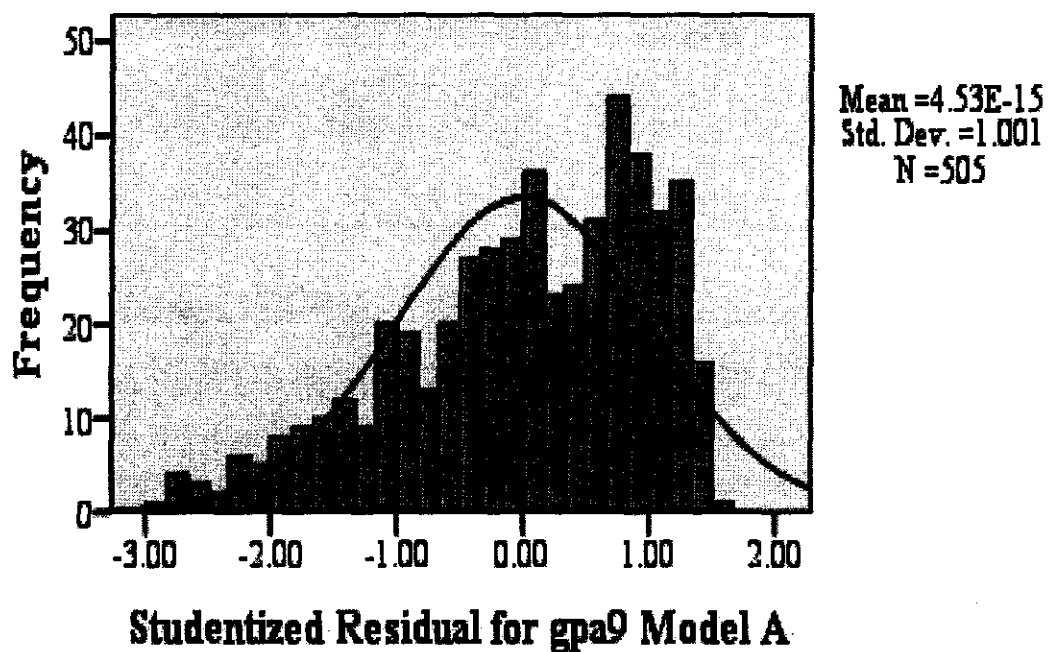


Figure 2. Studentized residuals for ninth grade grade point averages.

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In the event that the criterion variables did not meet the five assumptions above, a chi-squared analysis was run to test the null hypothesis for that particular criterion variable. In testing every hypothesis, the count variables (credits earned, failures, discipline referrals, and attendance) failed to meet the five assumptions, and the null hypotheses for these variables were tested using chi-squared analyses.

### *Hypothesis 1*

Hypothesis 1 states that at the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance. The predictor variable for this analysis was the freshman academy, and the criterion variables were grade point averages (numerical average on a 4.0 scale), ninth grade English grade point average (numerical average on a 4.0 scale), ninth grade social studies grade point average (numerical average on a 4.0 scale), credits earned (number of credits earned), failures (number of courses failed), discipline referrals (the number of times the student was referred to an administrator for discipline), and attendance rates (percent of school days the student was in school). All of this data was obtained from school records at the conclusion of the students' freshman year and was an average of both semesters of the students' ninth grade school year. The data was analyzed using a multivariate ANOVA (MANOVA) with all seven of the criterion variables on the Y side of the equation and a coded Vector representing freshman academy on the X side of the equation. Students in Cohort 2 were coded 1 on

freshman academy and students in Cohort 1 were coded 0. In the event that the data did not meet the five assumptions of MANOVA, the null hypothesis for that criterion variable was tested with a chi-squared analysis.

### *Hypothesis 2*

Hypothesis 2 states that when controlling for gender, at the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance. The predictor variables for this analysis were the freshman academy, gender, and interaction between the freshman academy and gender. The criterion variables were grade point averages (numerical average on a 4.0 scale), ninth grade English grade point average (numerical average on a 4.0 scale), ninth grade social studies grade point average (numerical average on a 4.0 scale), credits earned (number of credits earned), failures (number of courses failed), discipline referrals (the number of times the student was referred to an administrator for discipline), and attendance rates (percent of school days the student was in school). All of this data was obtained from school records at the conclusion of the students' freshman year and was an average of both semesters of the students' ninth grade school year. The data was analyzed using a multivariate ANOVA (MANOVA) with all seven of the criterion variables on the Y side of the equation and coded vectors for freshman academy and gender and an interaction term for freshman academy by gender on the X side of the equation. In the event that the data did not meet the five

assumptions of MANOVA, the null hypothesis for that criterion variable was tested with a chi-squared analysis. This test adequately addressed Hypothesis 2 using Cohorts 1 and 2 only.

### *Hypothesis 3*

Hypothesis 3 states that when controlling for curriculum designation (special education or regular education), at the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance. The predictor variables for this analysis was the freshman academy, special education identification, and interaction between the freshman academy and special education identification. The criterion variables were grade point averages (numerical average on a 4.0 scale), ninth grade English grade point average (numerical average on a 4.0 scale), ninth grade social studies grade point average (numerical average on a 4.0 scale), credits earned (number of credits earned), failures (number of courses failed), discipline referrals (the number of times the student was referred to an administrator for discipline), and attendance rates (percent of school days the student was in school). All of this data was obtained from school records at the conclusion of the students' freshman year and was an average of both semesters of the students' ninth grade school year. The data was analyzed using a multivariate ANOVA (MANOVA) with all seven of the criterion variables on the Y side of the equation and coded vectors for freshman academy and special education identification and an



interaction term for freshman academy by special education identification on the X side of the equation. In the event that the data did not meet the five assumptions of MANOVA, the null hypothesis for that criterion variable was tested with a chi-squared analysis. This test adequately addressed Hypothesis 3 using Cohorts 1 and 2 only.

#### *Hypothesis 4*

Hypothesis 4 states that at the end of tenth grade, there are no significant differences between Cohorts 1 and 2 in change between the criterion variables for ninth grade and tenth grade (grade point average, tenth grade English year-end grades, tenth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance at the conclusion of tenth grade). The predictor variables for this analysis were the freshman academy, time, and interaction between the freshman academy and time. The criterion variables were grade point averages (numerical average on a 4.0 scale), tenth grade English grade point average (numerical average on a 4.0 scale), tenth grade social studies grade point average (numerical average on a 4.0 scale), credits earned (number of credits earned), failures (number of courses failed), discipline referrals (the number of times the student was referred to an administrator for discipline), and attendance rates (percent of school days the student was in school). All of this data were obtained from school records. The data were analyzed using a series of repeated measures ANOVAs, with the seven criterion variables as the Y variables and freshman academy, and time and the interaction of freshman academy and time on the X side of the equation. This test included two data points corresponding to an end-of-the-year

comparison of the two cohorts, and it adequately addressed Hypothesis 4 using Cohorts 1 and 2 only.

#### *Hypothesis 5*

Hypothesis 5 states that at the end of ninth grade, there is no significant difference between Cohort 2 (freshman academy, no laptops) and Cohort 3 (freshman academy, laptop program) in grade point average, ninth grade English year-end grades, ninth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance. The predictor variables for this analysis was the laptop initiative. The criterion variables were grade point averages (numerical average on a 4.0 scale), ninth grade English grade point average (numerical average on a 4.0 scale), ninth grade social studies grade point average (numerical average on a 4.0 scale), credits earned (number of credits earned), failures (number of courses failed), discipline referrals (the number of times the student was referred to an administrator for discipline), and attendance rates (percent of school days the student was in school). All of this data was obtained from school records. The data was analyzed using a multivariate ANOVA (MANOVA) with all seven of the criterion variables on the Y side of the equation and a coded vector for the laptop initiative on the X side of the equation. In the event that the data did not meet the five assumptions of MANOVA, the null hypothesis for that criterion variable was tested with a chi-squared analysis. This test included one data point corresponding to the end of the first year for each cohort, and it adequately addressed Hypothesis 5 using Cohorts 2 and 3 only.

### Limitations

There are many variables that can impact both student engagement and student achievement; however, every effort was made to ensure that the classes representing Cohort 1, Cohort 2, and Cohort 3 are similar enough to produce valid and reliable results. Even so, this study has limitations:

1. In this study, three classes from different school years were being compared. Although the classes were from the same school, represented near-identical socioeconomic groups, and were separated by just one year, they were not identical and may have been influenced by variables that were not taken into account in the course of this research study.
2. Springfield High School won the Pennsylvania Classrooms for the Future grant in the spring of 2006 which enabled the school to purchase over \$400,000 worth of new interactive white boards and laptops between Cohort 1's freshman year and Cohort 2's freshman year. Although the majority of the equipment was not installed and/or utilized until April or May of the 2005-2006 school year, the infusion of these laptops and interactive white boards, even for six to seven weeks, may have impacted short-term variables such as attendance rates and discipline referrals. Grade point averages, English grade point averages, social studies grade point averages, credits earned, and failures most likely were unaffected by the installation of this technology so late in the school year.
3. The teachers within the freshman academy changed from Cohort 1 to Cohort 2; seven teachers stayed with ninth grade classes from Cohort 1 to Cohort 2,

and three teachers were shifted to ninth grade classes from other grade levels.

Also, the students' elementary and middle school teachers may have been different and could have affected the students' preparation levels coming into their ninth grade year.

4. The ninth grade assistant principal/disciplinarian remained consistent between Cohorts 1 and 2, but the ninth grade guidance counselor changed between Cohort 1 and Cohort 2. Both the assistant principal and the guidance counselor changed for Cohort 3.
5. Ninth grade students who had significant learning disabilities may have taken classes in self-contained special education classrooms or in the life skills program; these two alternative settings were not included in the scope of this research project, and therefore, life skills students and special education students who take primarily self-contained special education classes were not included in this study.
6. The freshman academy at Springfield High School is not a pure academy. Ninth graders take homogenous English, social studies, and biology classes, and there are two "freshman-only" electives. However, ninth graders at Springfield High School have three different levels of math available to them: Algebra I, Geometry, and Algebra II. Depending on the students' eighth grade courses, they could be accelerated in mathematics and could be placed in mixed classes with sophomores, juniors, and seniors. Physical education classes are mixed with sophomores, and ninth grade students could have taken

dozens of multi-grade electives in the area of art, music, family and consumer science, administrative technology, or industrial arts.

7. Although the length of this study covers three school years, 2005-2006, 2006-2007, and 2007-2008, the length of treatment for each cohort being studied was only one year. The researcher acknowledges that a one-year treatment is a relatively short length of time to produce results.
8. The freshman academy being studied was newly created for the 2006-2007 school year. Since it was a new program in that year, there were challenges that needed to be addressed during its first year of existence. The overall effect of the freshman academy may increase in subsequent years. Therefore, the contrast between Cohorts 2 and 3 was not a pure contrast of the effect of the laptop program. This effect was commingled with the effect of offering the freshman academy program for the second time.
9. The researcher currently serves as the principal of Springfield High School. However, the freshman academy was created by his predecessor, and the first two years included in this study do not include the years of the researcher's tenure at Springfield High School. The researcher did serve as the principal during the third year of the study; however, all programs included in this study were devised and implemented before the researcher assumed the position of principal. Although the researcher entered this study with a bias in favor of freshman academies, he conducted this study to see if real data would support the freshman academy's positive impact on students' transition into high school.

### Delimitations

The concepts of student engagement and achievement encompass hundreds of areas and can be measured in many ways. This study limits the measurement of student engagement and student achievement to seven main areas: grade point average, English grade point average, social studies grade point average, credits earned, failures, discipline referrals, and attendance. While these seven areas do not come close to defining the broad concept of student engagement and achievement, they are important pieces to the student engagement puzzle and allowed the researcher to gain a fairly accurate picture of a student's engagement and achievement in his/her school community.

This study was also limited to one suburban high school in the Philadelphia metropolitan area. Freshman academies are sprouting up throughout the United States in rural, urban, and suburban areas. Each of these areas has its own unique set of challenges, and while transition problems exist in each of these types of schools, the challenges in each are sometimes different. The researcher limited the scope of this project to one suburban school and assumes that the significance of the findings of this report are unique to suburban schools demographically similar to the one studied.

The researcher also chose not to study the differences in the achievement and engagement scores for students who were identified in a particular racial or ethnic subgroup because of the small sample sizes in each subgroup. Of the 894 students in this study, only 32 were identified as Asian, 66 were identified as Black/Non-Hispanic, and 8 were identified as Hispanic, while 788 were identified as White/Non-Hispanic.

Finally, according to the definition of freshman academy given in Chapter I, there are two main types of freshman academies: academies housed within a comprehensive

high school and academies housed separately from the comprehensive high school. The researcher chose to limit the scope of this study to the type of freshman academy that is housed within a larger, comprehensive high school.

### Summary

This chapter provided details on Springfield High School's freshman academy, the research design, population, data collection, hypotheses, and data analysis involved in the study of the effects of a freshman academy on student achievement and engagement in a large, comprehensive high school. The hypotheses were designed to target the research questions proposed in this study. The study involved three cohorts of students: one that experienced neither a freshman academy nor laptops, one that experienced a freshman academy without laptops, and one that experienced both a freshman academy and laptops. Using MANOVA, repeated measures ANOVA, and chi-squared comparisons, the data were analyzed to determine the effect of the freshman academy approach on student achievement and engagement as measured by grade point averages, English grade point averages, social studies grade point averages, credits earned, failures, discipline referrals, and attendance. The next chapter will present the analyses of the data.

## CHAPTER IV

### ANALYSIS OF THE DATA

#### Introduction

This chapter presents the results of the study that evaluated the impact of a freshman academy small learning community on student achievement and engagement as measured by seven indicators of academic achievement and engagement. This chapter will follow the methodology, research design, and hypotheses described in Chapter III. Data for this study was collected from the Springfield School District; the data for all three cohorts is historical data collected by the school district, and was cleaned of student identification information before receipt by the researcher. The students in this study are labeled using random identification numbers. This chapter, which will examine and analyze the data, includes each hypothesis, the statistical test used to test each hypothesis, and the details of the findings. A written summary of all of the study findings concludes the discussion for each hypothesis.

#### *Description of the Sample*

This study focused on the impact of a freshman academy small learning academy approach on both student achievement and engagement during the ninth grade year, and its sustainability into the tenth grade year as measured by grade point average, English grade point average, social studies grade point average, credits earned, failures, discipline referrals, and attendance using three different cohorts of incoming ninth graders. The



study also tested whether a one-to-one laptop computer initiative (LI) intensified any benefits of the freshman academy. The total population for this study consisted of 894 students. Cohort 1 consisted of 297 students, and these students were ninth graders during the 2005-2006 school year. During their ninth grade year, they did not experience a freshman academy nor did they receive laptop computers. Cohort 2 consisted of 300 students, and these students were ninth graders during the 2006-2007 school year. During their ninth grade year, they did experience a freshman academy but did not receive laptop computers. Cohort 3 consisted of 297 students, and these students were ninth graders during the 2007-2008 school year. They also experienced a freshman academy, and they received laptops as part of a one-to-one laptop program at Springfield High School. Table 2 shows the population sizes for each cohort as well as the total population size.

Table 2

*Frequency Table for Test Subjects*

[1] Cohort	[2] Frequency	[3] %	[4] Valid	[5] Cumulative
1	297	33.2	33.2	33.2
2	300	33.6	33.6	66.8
3	297	33.2	33.2	100.0
Totals	894	100.0	100.0	

The differences in male and female achievement and engagement scores were examined in each cohort to evaluate whether the freshman academy had a greater impact on one particular gender. Of the 894 students in this study, 432 were female and 462 were male. Table 3 displays the frequency breakdown for each gender subgroup.

Table 3

*Frequency Table for Test Subjects by Subgroup Gender*

[1] Gender	[2] Frequency	[3] %	[4] Valid	[5] Cumulative
Female	432	48.3	48.3	48.3
Male	462	51.7	51.7	100.0
Totals	894	100.0	100.0	

The differences in the achievement and engagement scores for students who were identified as special education students and students who were identified as regular education students were also examined in each cohort to evaluate whether the treatment had a greater impact on students with special education status. Of the 894 students in this study, 652 were identified as regular education and 242 were identified as special education. Table 4 displays the frequency breakdown for each curriculum designation (special education or regular education) subgroup.

Table 4

*Frequency Table for Test Subjects by Subgroup Curriculum Designation*

[1] Curriculum	[2] Frequency	[3] %	[4] Valid	[5] Cumulative
Regular Education	652	72.9	72.9	72.9
Special Education	242	27.1	27.1	100.0
Totals	894	100.0	100.0	

The hypotheses are replicated below for the reader to familiarize him/herself with again, and the data analysis follows in the same order the hypotheses are organized.

*Individual Hypotheses*

This study sought to test the following hypotheses:

1. At the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance.
2. Controlling for gender, at the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance.

3. Controlling for curriculum designation (special education or regular education), at the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance.
4. At the end of tenth grade, there are no significant differences between Cohorts 1 and 2 in change between the criterion variables for ninth grade and tenth grade (grade point average, tenth grade English year-end grades, tenth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance at the conclusion of tenth grade).
5. At the end of ninth grade, there is no significant difference between Cohort 2 (freshman academy, no laptops) and Cohort 3 (freshman academy, laptop program) in grade point average, ninth grade English year-end grades, ninth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance.

The results of each hypothesis will be shown in the order above. Hypotheses 1, 2, 3 and 5 were addressed using a multivariate analysis of variance (MANOVA). Hypothesis 4 was tested with a series of repeated measures ANOVAs.

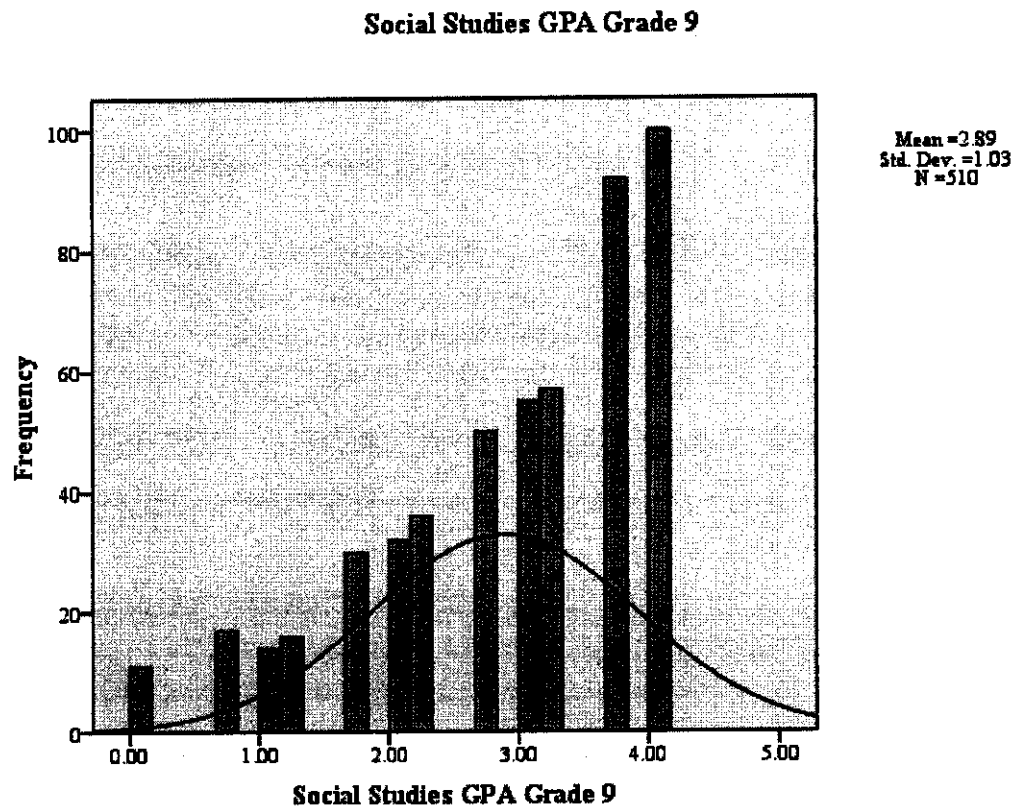
#### Findings for Hypothesis 1

$H_{01}$  : At the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial

freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance.

### *Preliminary Findings*

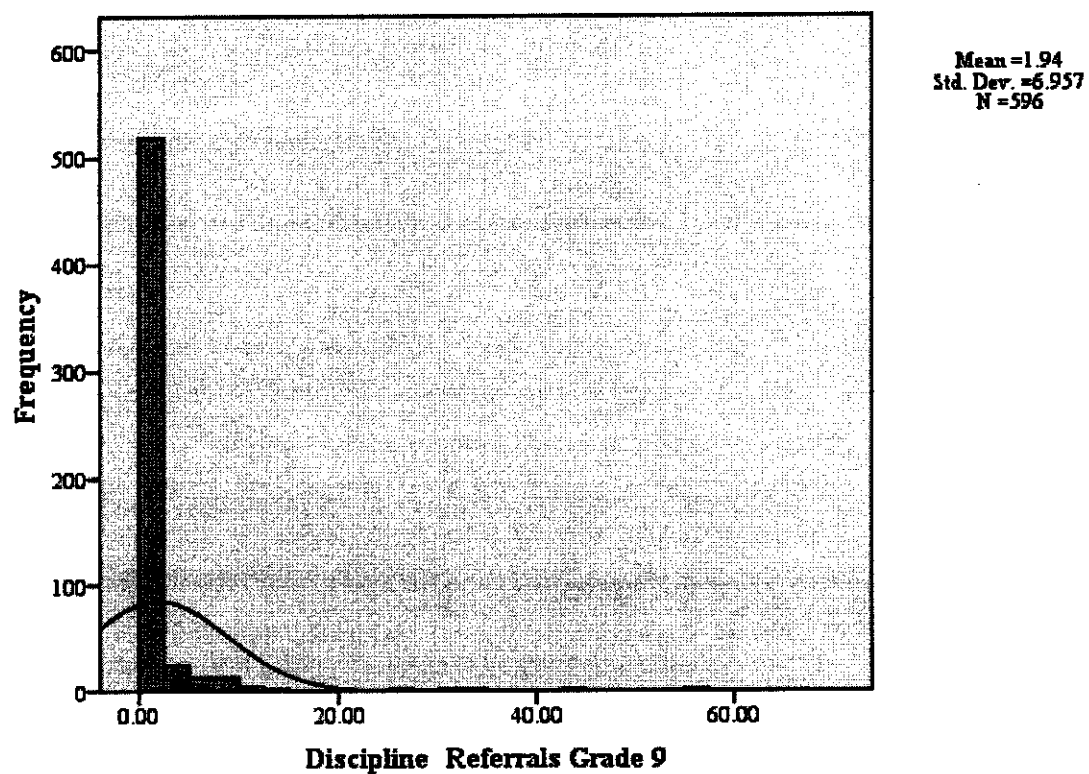
Upon reviewing the distributions of each variable, it was apparent that three variables were in need of transformation. Figure 3 shows the distribution of the social studies GPA; a review of this figure shows that the distribution is heavily skewed toward 4.0.



*Figure 3.* Distribution of ninth grade social studies grade point averages.

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Figure 4 shows that the discipline referral rates for ninth grade are also heavily skewed toward 0. This is to be expected, since many students do not receive discipline referrals on a yearly basis or only receive one referral per year. However, the distribution goes up as high as 60, and the distribution definitely exhibits non-normality.

**Discipline Referrals Grade 9**

*Figure 4.* Distribution of ninth grade discipline referral rates.

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Figure 5 shows that the distribution of failures for ninth grade also did not fit the normal distribution and was in need of transformation. Most students did not fail a course, and the distribution is heavily skewed toward 0. This variable is also in need of transformation in order to run a MANOVA.

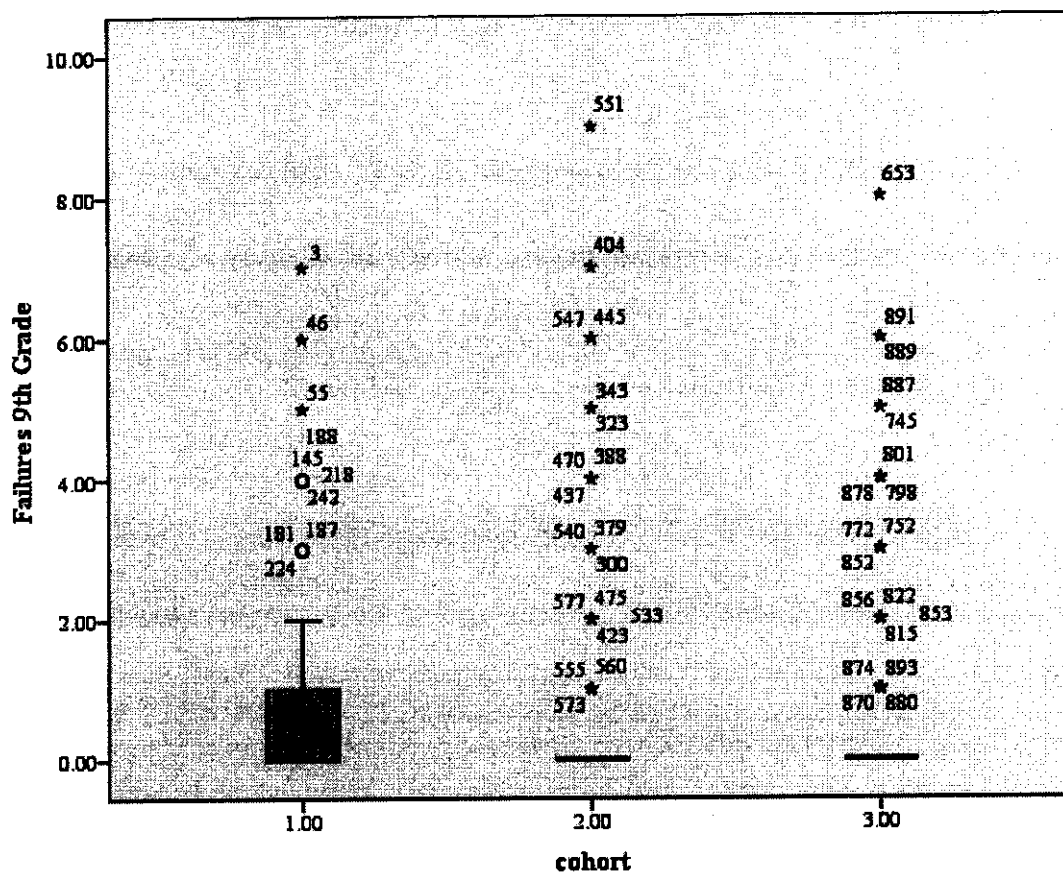


Figure 5. Distribution of ninth grade failures.

The variable social studies GPA could not be transformed, so the variable was run as is. It is important to note that Pillai's trace is robust to deviations from normality. Log 10 transformations were used for discipline referrals and failures. Because a log of 0 cannot be computed, each variable was started by adding a constant. The constant of 1 was added to discipline referrals, and the constant of 2 was added to failures. The same constant (1) could not be added to each variable because it resulted in a perfect correlation between the two, which could not be analyzed.

Model A was run with the transformed versions of discipline referrals and failures. Assumption of the equality of covariance matrices was not met because  $p$  should be greater than .05 to meet this assumption. Bartlett's test of sphericity was met. This test tells us that the criterion variables are sufficiently correlated to warrant a MANOVA test. The multivariate test showed significant differences between Cohort 1, the cohort that did not experience the freshman academy, and Cohort 2, the cohort that did experience the freshman academy (see Table 5). The transformed versions of discipline referrals and failures did not meet the assumption of homogeneity of variance.

The significant difference between the groups was due, for the most part, to a significant advantage of Cohort 2 in social studies GPA. The studentized residuals for each of the GPA variables were typically in the -2.5 to 2.5 range. For credits earned, discipline referrals, and failures, some residuals had absolute values greater than 4, and for attendance, residuals had absolute values greater than 6. These residuals are larger than they should be for a MANOVA analysis.

Table 5

*Results of Fitting a Taxonomy of MANOVA Models Predicting Student Achievement and Engagement for Students in a Freshman Academy Versus a Control Group*

Criterion Variables	Model A	Model B	Model C
GPA	.99	.99	.99
GPA English	.84	.84	.84
GPA Social Studies	-3.44**	-3.44**	-3.44**
Credits	.04	.04	
Failure		1.09	
Failure Log 10	1.64		
Discipline		-.59	
Discipline Log 10	1.82		
Attendance	-.84	-.84	
Pillai's Trace	.162***	.15***	

Note. Cell entries are *t* test values for the effect of treatment.

\*\*\* $p < .0005$     \*\* $p < .001$

Model B was then run with all variables in their original metrics (before transformations). The equality of covariance matrices assumption was not met. The assumption of sphericity was met, and the multivariate test was significant. The equality of error variances assumption was met for each variable. The univariate tests showed the difference between the groups was due mostly to the higher social studies GPA for Cohort 2. Studentized residuals looked about the same for most variables in the model

and a little worse for the untransformed versions of discipline and failure. Both Model A and Model B have some flaws. Model A had a violation of the homogeneity of variance assumption and residuals that were both non-normal and too large. Model B has residuals that were non-normal and were even larger than those in Model A.

A third model (Model C) was run with just the GPA data (overall GPA, English GPA, and social studies GPA), and the analysis of the other variables (credits earned, discipline referrals, failures, and attendance) would be run with a nonparametric model. In Model C, the equality of covariance matrices assumption was still not met, but the F is quite a bit smaller than in Model A or B. The sphericity assumption was met, and the multivariate test is significant. The equality of error variances assumption (homogeneity of variance assumption) was met. For the most part, the multivariate effect was due to the effect of the social studies GPA. The residuals were somewhat normal, and most of these residuals have an absolute value less than 2.5.

### *Findings of the Preferred Model*

#### *Grade point average variables.*

Model C was the preferred model for addressing the grade point average variables in Hypothesis 1. The only real flaw in the model was the violation of the assumption of equal covariance matrices, but Pillai's trace is robust to violations of the assumptions. It should be noted that Pillai's trace is the most robust criterion and is reasonably correct even when assumptions are violated (SPSS Advanced Stats, p. 83). Therefore, Model C was the selected model for the test of Hypothesis 1.

Because they did not meet the MANOVA assumptions specified above, the count variables (credits earned, discipline referrals, failures, and attendance) were addressed using a nonparametric analysis.

*Credits earned.*

Upon reviewing the histogram of credits, it was evident that there was a large group of students who had earned eight credits during their freshman year, so eight credits was designated as a cut-point in creating categories. There was a moderate size group with six to eight credits, so six credits was designated as another cut-point. A chi-square test was run on the null hypothesis that students in the treatment group and control group were equally represented in each category of earned credits (see Table 6). The null hypothesis was rejected ( $\chi^2 = 6.52$ ,  $p < .04$ ). Although the chi-square reached the level of significance ( $p < .05$ ), none of the standardized residuals associated with the cells in this table achieved significance (standardized residuals  $> 1.96$  indicate a significant deviation from expected). This reflects that the accumulated deviations from expected are significant, but none of the specific deviations is significant. Hence, students in Cohort 2, the group who experienced the freshman academy, were more likely to be in the category of students who had earned many credits.

Table 6

*The Effect of Cohort Group on Credit Acquisition**Credits grade 9 categories \* cohort Crosstabulation*

		cohort			
		1	2	Total	
Credits grade 9 categories	Few Credits	Count	20	17	37
		Expected Count	18.4	18.6	37.0
		Std. Residual	.4	-.4	
	Moderate Number of Credits	Count	69	47	116
		Expected Count	57.6	58.4	116.0
		Std. Residual	1.5	-1.5	
	Many Credits	Count	183	212	395
		Expected Count	196.1	198.9	395.0
		Std. Residual	-.9	.9	
	Total	Count	272	276	548
		Expected Count	272.0	276.0	548.0

*Failures.*

For failures, two categories were created: the At Risk category for students who had ANY failures, the Not At Risk for students with no failures. A post hoc test for chi-

square was run on the null hypothesis that students in the treatment group and the control group were equally represented in the At Risk and Not At Risk categories (see Table 7). The null hypothesis was rejected ( $\chi^2 = 8.62$ ,  $p < .003$ ). Although the chi-square reached the level of significance ( $p < .05$ ), none of the standardized residuals associated with the cells in this table achieved significance (standardized residuals  $> 1.96$  indicate a significant deviation from expected). This reflects that the accumulated deviations from expected are significant, but none of the specific deviations is significant. Hence, students in Cohort 1 who had not experienced the freshman academy were more likely to be in the At Risk category.



Table 7

*The Effect of Cohort Group on Failure**Failure grade 9 categories \* cohort Crosstabulation*

		cohort		
		1	2	Total
Failure Category Grade 9	At Risk			
	Count	74	50	124
	Expected Count	59.5	64.5	124.0
	Std. Residual	1.9	-1.8	
Not At Risk	Count	203	235.5	453.0
	Expected Count	217.5	58.4	116.0
	Std. Residual	-1.0	.9	
Total				
	Count	277	300	577
	Expected Count	277.0	300.0	577.0

*Discipline referrals.*

Upon reviewing the histogram for discipline referrals, it was evident that there was a large group with 0 referrals, so 0 was a category unto itself. There was also a large group (67 students) with one referral, so one referral was a category unto itself. Students with two or more referrals were placed in a third group of repeated referrals. A chi-square test was run on the null hypothesis that students in Cohort 1 and Cohort 2 would be equally represented in each category of discipline referrals (see Table 8). The differences

among groups were not significant ( $\chi^2 = 5.57$ ,  $p = ns$ ), but there appeared to be a trend such that students in Cohort 2 were more likely to be in the one referral group than students in Cohort 1.

Table 8

*The Effect of Cohort Group on Discipline Referrals*

*Disciplinary Referrals Grade 9 Category \* cohort Crosstabulation*

		cohort		
		1	2	Total
Disciplinary Referrals Grade 9 Category	Repeated Referrals			
	Count	46	56	102
	Expected Count	50.8	51.2	102.0
	Std. Residual	-.7	.7	
	One Referral			
	Count	26	41	67
	Expected Count	33.4	33.6	67.0
	Std. Residual	-1.3	1.3	
	No referrals			
	Count	225	202	427
	Expected Count	212.8	214.2	427.0
	Std. Residual	.8	-.8	
	Total			
	Count	297	299	596
	Expected Count	297.0	299.0	596.0

*Attendance.*

Upon reviewing the histogram and frequency table for attendance at grade nine, three categories were constructed. The first category was created for students with perfect attendance, the second category for students who had between one (.5) and 10 absences, and the third category for students who had more than 10 absences. A chi-squared was applied to the null hypothesis that Cohort 1 and Cohort 2 were equally represented in the attendance categories. The null hypothesis was accepted ( $\chi^2 = 1.41$ ,  $p = .ns$ ), and no statistically significant difference was found between the attendance rates for Cohort 1 and Cohort 2.

*Summary for Hypothesis 1*

To summarize the findings for the first hypothesis, the null hypothesis was rejected because the multivariate test (Pillai's trace) was significant in Model C for the three GPA criterion variables (grade point average, English GPA, and social studies GPA). Although the multivariate test examined all criterion variables simultaneously, it appeared that social studies GPA had the strongest impact. For social studies, the univariate tests showed that students in Cohort 2 had higher mean grade point averages than students in Cohort 1. Using the nonparametric chi-squared analysis, the null hypothesis was rejected for credits earned and failures. Students in Cohort 2 were less likely to be At-Risk for failing a course and were more likely to earn a high number of credits during their ninth grade year. However, the null hypothesis was accepted for discipline referrals and attendance, as there was not a statistically significant difference between Cohort 1 and Cohort 2 in these categories.

### Findings for Hypothesis 2

*H<sub>02</sub>*: Controlling for gender, at the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance.

### *Preliminary Findings*

Model D was run with the original metrics for all criterion variables with the exception of log10 transformations of discipline referrals and failures. As was done in Model A, starting values were assigned to transform any 0 values. The predictors in this model were cohort, gender, and the interaction of the two. The assumption of the equality of covariance matrices was not met because  $p$  was less than .05 ( $p$  should be greater than .05 to meet this assumption). Bartlett's test of sphericity was met because the  $p$  was greater than .05 ( $p$  must be less than .05 to meet this assumption). The error variances are not equal for attendance and for log 10 transformation of discipline. The multivariate test showed that the interaction between gender and cohort is not significant. It is interesting to note that females had significantly higher GPAs than did males in English, social studies, and overall. Conversely, males had significantly higher scores on attendance. The studentized residuals showed violations of normality and some very large residuals, especially for the count variables (credits earned, failures, discipline referrals, and attendance) (see Table 9).

Table 9

*Results of a Taxonomy of MANOVA Models Predicting Student Achievement and Engagement for Males and Females in a Freshman Academy Versus a Control Group*

Criterion Variables	Model D	Model E	Model F
GPA	.08	-.08	-.08
GPA English	.37	-.37	-.37
GPA Social Studies	-.35	.35	.35
Credits	.29	-.29	
Failure		-.42	
Failure Log 10	.47		
Discipline		.34	
Discipline Log 10	.50		
Attendance	-.06	.06	
Pillai's Trace	.004	.004	.003

*Note.* Cell entries are *t* test values for the interaction effect for treatment X gender.

Model E was run with the original metrics for all criterion variables. The predictors in this model were cohort, gender, and the interaction term. The assumption of the equality of covariance matrices was not met, but Bartlett's test of sphericity was met for this model. The error variances assumption was met with the exception of attendance. The multivariate test showed that the interaction between gender and cohort is not significant. The studentized residuals showed violations of normality and some very

large residuals, especially for the count variables (credits earned, failures, discipline referrals, and attendance).

### *Findings of the Preferred Model*

Model F was run with the grade point average variables only (GPA, English GPA, and social studies GPA). The predictors in this model were cohort, gender, and the interaction between cohort and gender. The assumption of the equality of covariance matrices was not met, but Bartlett's test of sphericity was met for this model. The equality of error variance matrices assumption was met. The multivariate test showed that the interaction between gender and cohort is not significant. The studentized residuals were more acceptable in Model F than in the previous two model tests for Hypothesis 2, and therefore, Model F is the best choice of models for testing Hypothesis 2.

Because Model F only tested the grade point average variables, it was necessary to test Hypothesis 2 for the count variables with a nonparametric approach. A loglinear analysis was applied to these variables because this type of analysis can handle three or more categorical variables and their interactions, and because it has less restrictive assumptions than the parametric analysis. The results of the loglinear tests are given in Table 10. The null hypothesis was accepted for all four criterion variables, and there is no statistically significant difference between the engagement and achievement of girls and boys in Cohorts 1 and 2.

Table 10

*Results from a Series of Loglinear Tests of the Links Among Treatment, Gender, and Student Achievement and Engagement Variables*

Effect	Z	Sig. Level
Treatment*Gender*Failure	-.168	NS
Treatment*Gender*Credit	.49	NS
Treatment*Gender*Discipline	.47	NS
Treatment*Gender*Attendance	.41	NS

### *Summary for Hypothesis 2*

To summarize the findings for the second hypothesis, the null hypothesis was accepted for Hypothesis 2 because the multivariate test (Pillai's trace) was not significant. There was no statistically significant difference between the academic achievement or student engagement for girls and boys in Cohorts 1 and 2 as measured by grade point average, English GPA, social studies GPA, credits earned, discipline referrals, failures, or attendance. It is interesting to note that this analysis uncovered the fact that females had significantly higher GPAs than did males in English, social studies, and overall, whereas males had significantly higher scores on attendance.

### Findings for Hypothesis 3

*H<sub>03</sub>*: Controlling for curriculum designation (special education or regular education),

at the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance.

### *Preliminary Findings*

Model G was run with the original metrics for all criterion variables with the exception of log transformations of discipline referrals and failures. The predictors in this model were cohort, curriculum designation (regular education or special education), and the interaction of the two. The assumption of the equality of covariance matrices was not met because  $p$  was less than .05. Bartlett's test of sphericity was met because the  $p$  was less than .05. The error variances assumption was also not met; the boxplots for the grade point average variables, credits earned, failures, discipline referrals, and attendance for regular education students compared to special education students revealed, as expected, a much greater variability among the special education students for all of these variables. The residual variances also violate the MANOVA assumptions, especially for the count variables. The multivariate test did show that the interaction between curriculum designation and cohort is significant (Pillai's trace = .029,  $F[7, 495] = 2.09$ ,  $p < .05$ ). Although none of the univariate effects was large enough to reach significance, the ones that came the closest to significance were social studies GPA ( $F = 1.74$ ,  $p < .18$ ) and attendance ( $F = 2.25$ ,  $p < .13$ ). Based on a visual inspection of the line graphs, it appeared that the freshman academy benefited the students designated as regular



education more than the students with special education designation in social studies GPA. In contrast, it appeared that the freshman academy benefited the special education students more than the regular education students in attendance. The *t* test results for the interaction effect are presented in Table 11.

Table 11

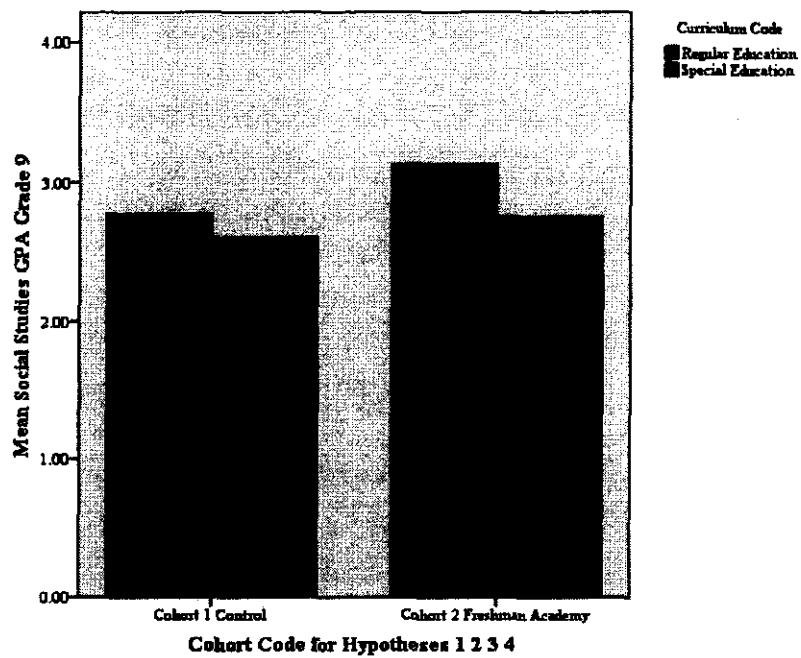
*Results of a Taxonomy of MANOVA Models Predicting Student Achievement and Engagement for Regular Versus Special Education Students in a Freshman Academy Versus a Control Group*

Criteria	Model G	Model H	Model I
GPA	-.65	-.65	-.65
GPA English	.46	.46	.46
GPA Social Studies	-1.32	-1.32	-1.32
Credits	.38	.39	
Failure		.85	
Failure Log 10	1.12		
Discipline		-.34	
Discipline Log 10	1.18		
Attendance	1.50	1.50	
Pillai's Trace	.03*	.03*	.02*

*Note.* Cell entries are *t* test values for the interaction effect for treatment X curriculum designation.

\**p* < .05.

Model H was run with the original metrics for all criterion variables. The predictors in this model were cohort, curriculum designation, and the interaction term. The assumption of the equality of covariance matrices was not met, but Bartlett's test of sphericity was met because the  $p$  was less than .05. The equality of variances assumption was met for only one variable. The multivariate test showed that the interaction between curriculum designation and cohort is significant. The studentized residuals showed violations of normality and some very large residuals, especially for the count variables (credits earned, failures, discipline referrals, and attendance). None of the univariate tests reach significance, but similar to Model G, the ones that come closest to statistical significance are social studies GPA and attendance. The freshman academy seemed to have a more beneficial effect for regular education students in social studies GPA, yet a more beneficial effect for special education for attendance. A plot of this effect is given in Figure 6.



*Figure 6.* Bar graph comparing social studies GPA for regular education versus special education students in Cohorts 1 and 2.

---

### *Findings of the Preferred Model*

#### *Grade point average variables.*

Model I was run with the grade point average variables only (GPA, English GPA, and social studies GPA). The predictors in this model were cohort, curriculum designation, and the interaction between cohort and curriculum designation. The assumption of the equality of covariance matrices was not met, but Bartlett's test of sphericity was met. The equality of error variance matrices assumption was not met, but the studentized residuals were fairly normal (most had values between -3 and 3) and more acceptable in Model I than in the previous two model tests for Hypothesis 3, and therefore, Model I is the best choice of models for testing Hypothesis 3. The multivariate test showed that the interaction between curriculum designation (regular education or special education) and cohort is significant. However, none of the univariate effects reached significance, but social studies GPA came the closest. The freshman academy seemed to benefit regular education students more than special education students in social studies GPA. Model I is the preferred model for Hypothesis 3 because it has the fewest violations of MANOVA assumptions.

The joint effect of the freshman academy and curriculum designation was tested on the count variables (credits earned, failures, discipline referrals, and attendance) using a nonparametric test.

#### *Credits earned*

A loglinear analysis was used to test for differential effects of the freshman

academy on regular education students versus special education students with regard to course credits category (see Table 12). The joint effect was statistically significant; however, none of the individual cells had counts unusual enough to be considered significant.

Table 12

*Results from a Series of Loglinear Tests of the Links Among Treatment, Curriculum Designation, and Student Achievement and Engagement Variables*

Effect	Z	Sig. Level
Treatment*Curriculum*Failure	.79	NS
Treatment*Curriculum*Credit	-1.59	NS
	2.34*	.02
Treatment*Curriculum*Discipline	.31	NS
	-.54	NS
Treatment*Curriculum*Attendance	-2.13*	.03
	-.75	NS

\* $p < .05$ .

### *Failures.*

A loglinear analysis was also used to examine the links among treatment, curriculum designation, and categories of failed courses (either no failures or one or more failures). The interaction among the three variables was not significant ( $z = .79$ ,  $p < .42$ ,

NS) (see Table 12). Thus, there is not a differential impact of the freshman academy on students in regular education versus special education with regard to failing courses.

*Discipline referrals.*

A loglinear analysis was also used to test for differential effects of the freshman academy on regular education students versus special education students with regard to discipline referral category. Three categories were used: no referrals, one referral, and more than one referral. The interaction effect between the freshman academy and the curriculum designation was not significant (see Table 12).

*Attendance.*

A loglinear model was selected to examine the links among the freshman academy treatment, curriculum designation, and categories of attendance. The joint effect of the three variables was significant. A post hoc analysis of the standardized residuals for each cell revealed that, while none of the effects reached the level of 1.96 ( $p < .05$ ), the largest residuals were -1.34 for the counts in the cell for Cohort 1, special education, and perfect attendance, and +1.34 for the counts in the cell for Cohort 2, special education, and perfect attendance. In the special education group, students in Cohort 2 were more likely to have perfect attendance (eight students) than were special education students in the Cohort 1 (only two students). The Z statistic for the interaction term in the loglinear analysis is given in Table 12.

### *Summary for Hypothesis 3*

To summarize the findings for the third hypothesis, the null hypothesis was rejected because the multivariate test (Pillai's trace) was significant in Model I for the three GPA criterion variables (grade point average, English GPA, and social studies GPA). The multivariate test showed that the interaction between curriculum designation (regular education or special education) and cohort was significant, although none of the univariate effects reached significance. It did appear that the univariate effect for social studies GPA was approaching significance, for it had the strongest impact and showed that students in Cohort 2 had a higher mean grade point average in social studies than students in Cohort 1. The freshman academy seemed to benefit regular education students more than special education students in social studies GPA. Using the nonparametric loglinear analysis, the null hypothesis was accepted for credits earned, failures and discipline referrals. However, the null hypothesis was rejected for the criterion variable attendance because there was a statistically significant interaction between the freshman academy, curriculum designation, and attendance. Students with a special education designation who experienced the freshman academy as part of Cohort 2 were more likely to have perfect attendance (eight students) than were special education students in Cohort 1 (only two students).

### Findings for Hypothesis 4

*H<sub>04</sub>:* At the end of tenth grade, there are no significant differences between Cohorts 1 and 2 in change between the criterion variables for ninth grade and tenth grade (grade point average, tenth grade English year-end grades,

tenth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance at the conclusion of tenth grade).

For this hypothesis, a series of repeated measures ANOVAs was used to test the null hypothesis that the freshman academy treatment has no sustaining impact into subsequent years. For Models J through P, a different variable from the seven criterion variables used in this study (GPA, English GPA, social studies GPA, credits earned, failures, discipline referrals, and attendance) was entered. The tenth grade data was checked for outliers (the ninth grade data was checked for outliers in the previous models). Upon review, it was found that Student ID 149 in Cohort 1 had an outlier on discipline referrals, and Student ID 591 had a large value for discipline referrals. The discipline referrals model was run first with these two outliers and then again with those outliers removed.

### *Grade Point Average*

Model J was run on the criterion variable of grade point average. The predictors in this model were cohort, time, and the interaction between cohort and time. The assumption of the equality of covariance matrices and Bartlett's test of sphericity were both met for this model. The equality of error variance matrices assumption was met, and the studentized residuals were normal with most values between -2.5 and +2.5. The test of the interaction was not significant (Pillai's trace = .004,  $F = 2.25$ ,  $p < .13$ , NS). Therefore, there was no difference in GPA gain in tenth grade for students who experienced the freshman academy as part of Cohort 2 and the students who did not experience the freshman academy as part of Cohort 1.



### *English GPA*

Model K was run on the criterion variable of English GPA. The predictors in this model were cohort, time, and the interaction between cohort and time. The assumption of the equality of covariance matrices and Bartlett's test of sphericity were both met for this model. The equality of error variance matrices assumption was met, and the studentized residuals were normal with most values between -2.5 and +2.5. The test of the interaction between cohort and time was not significant (Pillai's trace = .004,  $F = 2.13$ ,  $p < .14$ , NS). There was no difference in change in English GPA for tenth grade students who had experienced the freshman academy as part of Cohort 2 and tenth grade students who went through their freshman year without a freshman academy as part of Cohort 1.

### *Social Studies GPA*

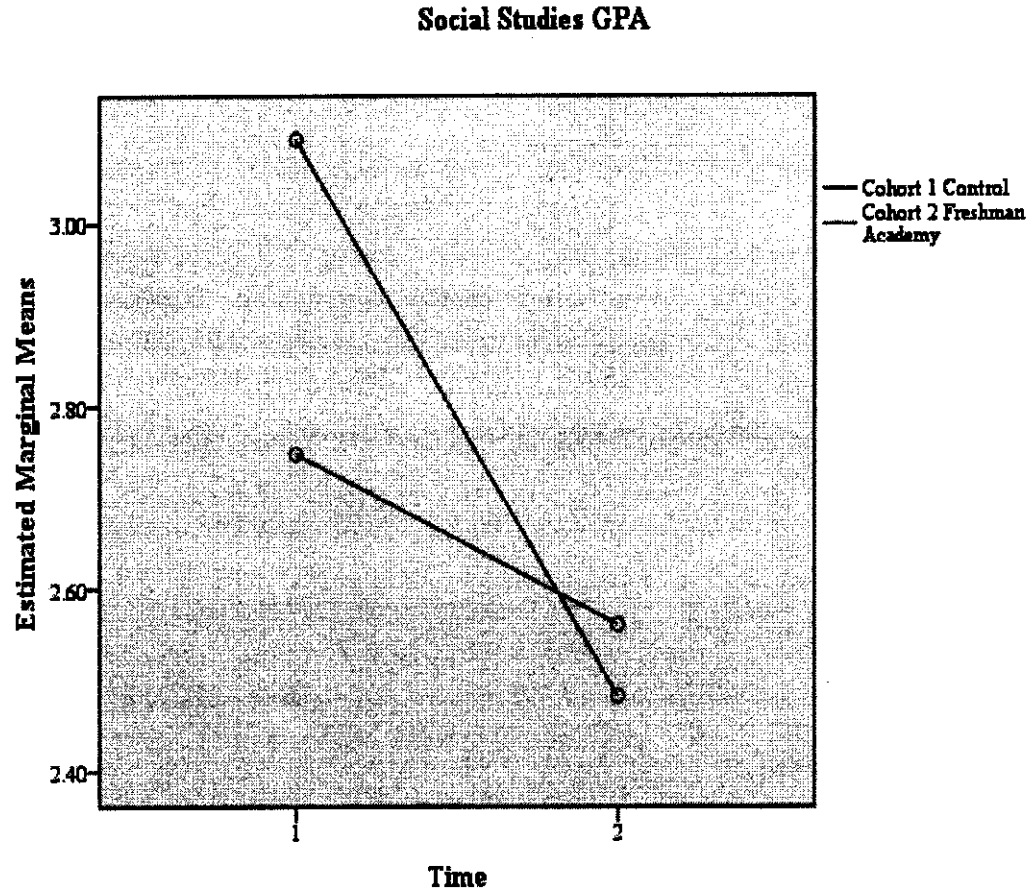
Model L was run on the criterion variable of social studies GPA. The predictors in this model were cohort, time, and the interaction between cohort and time. The assumption of the equality of covariance matrices was met, but Bartlett's test of sphericity was not met because  $p$  was greater than .05. However, Pillai's trace is robust to violations of this assumption. The equality of error variance matrices assumption was met, and the studentized residuals were normal with most values between -2.5 and +2.5. The interaction between cohort and time was significant for social studies GPA (Pillai's trace = .071,  $F = 37.09$ ,  $p < .000$ ). The differential means for each group on social studies GPA are given on Table 13 and depicted visually on Figure 7 below. As these depictions illustrate, the students who experienced the freshman academy as part of

Cohort 2 showed a greater decline in social studies grades in tenth grade than the students who did not experience a freshman academy during their ninth grade year.

Table 13

*Repeated Measures ANOVA for Social Studies GPA*

95% Confidence Interval					
Cohort	Time	Mean	Std. Error	Lower Bound	Upper Bound
Cohort 1 Control	1	2.748	.064	2.622	2.874
	2	2.561	.074	2.415	2.707
Cohort 2 Freshman Academy	1	3.092	.065	2.963	3.220
	2	2.482	.076	2.334	2.631



*Figure 7.* Differential means for cohorts 1 and 2 on social studies GPA over two years.

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### *Credits Earned*

Model M1 was run on the criterion variable of number of credits earned. The predictors in this model were cohort, time, and the interaction between cohort and time. The assumption of the equality of covariance matrices was not met because  $p$  was less than .05, but Bartlett's test of sphericity was met. The equality of error variance matrices assumption was not met, and the studentized residuals were non-normal with some values having an absolute value greater than 6. The interaction between cohort and time was not significant for credits earned, but it was close to significant (Pillai's trace = .006,  $F = 3.26$ ,  $p < .08$ , NS). There was an indication of a trend emerging in the data. It appeared that the students who experienced a freshman academy as part of Cohort 2 had a steeper decline in number of credits earned from ninth grade to tenth grade as compared to Cohort 1 students (see Table 14). However, there were serious violations of the MANOVA model assumptions, and this trend should be interpreted cautiously.

Table 14

#### *Repeated Measures ANOVA for Credit Acquisition*

Cohort	Time	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Cohort 1 Control	1	7.632	.057	7.519	7.745
	2	7.603	.074	7.458	7.748
Cohort 2 Freshman Academy	1	7.651	.057	7.539	7.764
	2	7.475	.073	7.331	7.619

### *Failures*

Model N1 was run on the criterion variable of number of failures. The predictors in this model were cohort, time, and the interaction between cohort and time. The assumption of the equality of covariance matrices was not met because  $p$  was less than .05. However, Pillai's trace is robust to violations of this assumption. Bartlett's test of sphericity was met because  $p$  was less than .05. The equality of error variance matrices assumption was not met, and the studentized residuals were non-normal with some values having an absolute value greater than 5. The interaction between cohort and time was not significant for number of failures (Pillai's trace = .003,  $F = 1.81$ ,  $p < .18$ , NS). Thus, there are no differences in the number of failures from ninth to tenth grade for students who experienced the freshman academy as part of Cohort 2 and students who did not experience the freshman academy as part of Cohort 1. However, there were serious violations of the model assumptions, and this result should be interpreted cautiously.

### *Discipline Referrals*

Model O1 was run on the criterion variable of number of discipline referrals. The predictors in this model were cohort, time, and the interaction between cohort and time. The assumption of the equality of covariance matrices was not met because  $p$  was less than .05. However, Pillai's trace is robust to violations of this assumption. Bartlett's test of sphericity was met. The equality of error variance matrices assumption was not met, and the studentized residuals were non-normal with some values having an absolute value greater than 5. The interaction between cohort and time was not significant for number of discipline referrals (Pillai's trace = .003,  $F = 1.81$ ,  $p < .18$ , NS). Thus, it can be concluded that there are no differences in the number of discipline referrals from ninth to

tenth grade for students who experienced the freshman academy as part of Cohort 2 and students who did not experience the freshman academy as part of Cohort 1. However, there were serious violations of the model assumptions, and this result should be interpreted cautiously.

Model O2 was also run on the criterion variable of number of discipline referrals. The predictors in this model were cohort, time, and the interaction between cohort and time. Student ID 149 in Cohort 1 had an outlier on discipline referrals, and Student ID 591 had a very large value for discipline referrals. These outliers could have explained the violations in the assumptions of the model. In Model O2, the assumption of the equality of covariance matrices was not met because  $p$  was less than .05 to meet this assumption. However, Pillai's trace is robust to violations of this assumption. Bartlett's test of sphericity was met. The equality of error variance matrices assumption was not met, and the studentized residuals were non-normal with some values having an absolute value greater than 5. Again in Model O2, the interaction between cohort and time was not significant for number of discipline referrals (Pillai's trace = .000,  $F = .16$ ,  $p < .69$ , NS). Thus, it can be concluded that there are no differences in the number of discipline referrals from ninth to tenth grade for students who experienced the freshman academy as part of Cohort 2 and students who did not experience the freshman academy as part of Cohort 1. However, there were serious violations of the model assumptions, and this result should be interpreted cautiously.

### *Attendance*

Model P was run on the criterion variable of number of attendance. The

predictors in this model were cohort, time, and the interaction between cohort and time. The assumption of the equality of covariance matrices was not met; however, Pillai's trace is robust to violations of this assumption. Bartlett's test of sphericity was met. The equality of error variance matrices assumption was met, but the studentized residuals were non-normal with some values having an absolute value greater than 5. The interaction between cohort and time was not significant for attendance, but it is trending toward significant (Pillai's trace = .006,  $F = 2.95$ ,  $p < .09$ , NS). Thus, it can be concluded that there are no differences in the change in attendance from ninth to tenth grade for students who experienced the freshman academy as part of Cohort 2 and students who did not experience the freshman academy as part of Cohort 1. However, there is a trend for attendance to drop more steeply from ninth to tenth grade for students who experienced the freshman academy as part of Cohort 2 compared to students who did not experience a freshman academy as part of Cohort 1. Table 15 shows the mean number of days in attendance for each group, and Figure 8 is a visual depiction of the means that display this trend. Since there were serious violations of the model assumptions, and this result should be interpreted cautiously.

Table 15

*Repeated Measures ANOVA for Attendance*

Cohort	Time	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Cohort 1 Control	1	173.207	.449	172.325	174.090
	2	172.779	.488	171.821	173.737
Cohort 2 Freshman Academy	1	173.343	.447	172.465	174.220
	2	172.052	.485	171.100	173.004



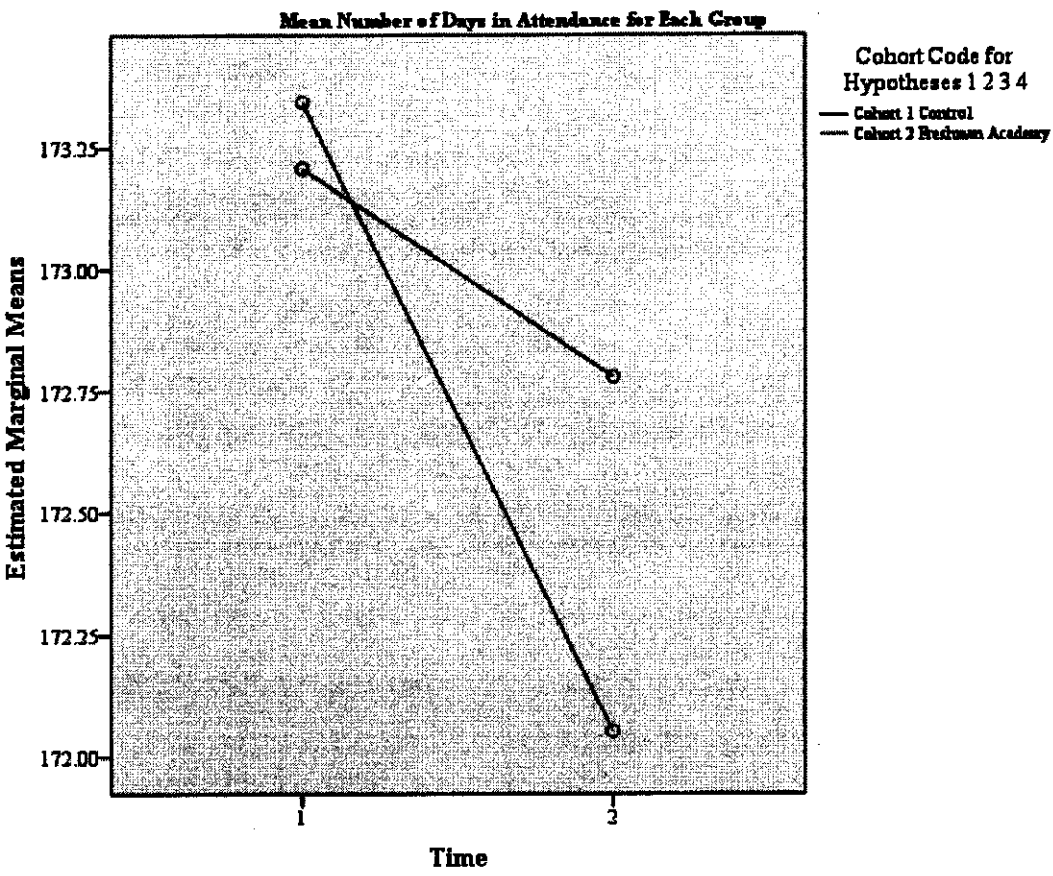


Figure 8. Differential means for cohorts 1 and 2 on attendance over two years.

#### *Summary for Hypothesis 4*

To summarize the findings for the fourth hypothesis, the null hypothesis was accepted for Hypothesis 4 for the criterion variables of grade point average, English GPA, credits earned, failures, discipline referrals, and attendance. The null hypothesis was rejected for the criterion variable social studies GPA because there was a statistically significant interaction between cohort and time for the criterion variable social studies GPA. It can be concluded from this finding that the students who experienced the freshman academy as part of Cohort 2 showed a greater decline in social studies grades from ninth grade to tenth grade than the tenth grade students who did not experience a freshman academy during their ninth grade year. Although they were not statistically significant, there seemed to be two emerging trends illustrated by the data with the criterion variables of credits earned and attendance. Students who experienced the freshman academy as part of Cohort 2 seemed to have steeper declines in both credits earned and attendance in their tenth grade year compared to students who did not experience the freshman academy as part of Cohort 1.

#### Findings for Hypothesis 5

$H_{05}$ : At the end of ninth grade, there is no significant difference between Cohort 2 (freshman academy, no laptops) and Cohort 3 (freshman academy, laptop program) in grade point average, ninth grade English year-end grades, ninth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance.

### *Preliminary Findings*

The analytic plan for Hypothesis 5 was to fit a systematic taxonomy of models to examine the null hypothesis that there would be no difference in levels of students achievement and student engagement for students in Cohort 3 who experienced a freshman academy combined with a one-to-one laptop computer initiative versus students in Cohort 2 who experienced a freshman academy without a one-to-one laptop initiative. To test this hypothesis, a data set had to be created with Cohorts 2 and 3 only. The data set was checked for outliers and normality. The criterion variables of GPA and English GPA were normal, but social studies GPA was not normal. There was no way to transform this variable to make it normal, but one can invoke the central limit theorem to justify the application of MANOVA since the sample size is so large. The count data (credits earned, failures, discipline referrals, and attendance) were not checked for normality because it had already been established that the count data were not normally distributed and that transformations did not improve the model fit. After review, it was determined that there were no unreasonable outliers. Therefore, the MANOVA was run with all of the variables in their original metrics.

Model Q was run with the original metrics for all criterion variables. The predictor in this model was cohort. The assumption of the equality of covariance matrices was not met because  $p$  should be greater than .05 to meet this assumption. However, Pillai's trace is robust to violations of this assumption. Bartlett's test of sphericity was met because the  $p$  was less than .05. The equality of error variances assumption was met, and the studentized residuals were fairly normal and within a reasonable range for the GPA data. For the count data, the studentized residuals were

non-normal, and some were very large with absolute values greater than five. The MANOVA results for Model Q are given in Table 16 below.

Table 16

*Results of a Taxonomy of MANOVA Models Predicting Student Achievement and Engagement for Students Who Received Laptop Computers in a Freshman Academy Versus a Control Group*

Criterion Variables	Model Q	Model R
GPA	1.56	1.56
GPA English	2.35*	2.35*
GPA Social Studies	2.89***	2.89***
Credits	.21	
Failure	-.43	
Discipline	-.72	
Attendance	.44	
Pillai's Trace	.04**	.03****

*Note.* Cell entries are *t* test values for the interaction effect for treatment (Laptop Initiative and Freshman Academy) versus Freshman Academy alone.

\* $p < .05$ . \*\* $p < .01$ , \*\*\* $p < .005$ . \*\*\*\* $p < .0005$ .

The multivariate test showed significant differences between Cohort 3, the cohort who experienced the freshman academy combined with the one-to-one laptop initiative, and Cohort 2, the cohort who experienced the freshman academy without laptops. The

univariate effects were also significant for both English GPA and social studies GPA. Cohort 2 had significantly higher scores in their year-end English and year-end social studies grades than did Cohort 3. Table 17 illustrates the differences in means for the two cohorts.

Table 17

*The Effect of Cohort Group on Grade Point Average Variables*

Criterion Variable	Cohort Code for Hypotheses 5	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
GPA Grade 9	Cohort 2 Freshman Academy	2.879	.059	2.764	2.994
	Cohort 3 Freshman Academy and Laptop	2.753	.056	2.644	2.862
English GPA Grade 9	Cohort 2 Freshman Academy	2.796	.065	2.668	2.923
	Cohort 3 Freshman Academy and Laptop	2.585	.062	2.464	2.706
Social Studies GPA Grade 9	Cohort 2 Freshman Academy	3.056	.061	2.936	3.177
	Cohort 3 Freshman Academy and Laptop	2.813	.058	2.699	2.927

### *Findings of the Preferred Model*

#### *Grade point average variables.*

Because the studentized residuals of the count data indicated violations of the model assumptions for this type of analysis, a second model was run with just the grade point average data (GPA, English GPA, social studies GPA). In Model R, the equality of covariance matrices assumption was still not met, but Pillai's trace is robust to violations of this assumption. The sphericity assumption was met, and the equality of error variances assumption (homogeneity of variance assumption) was met. The multivariate effect of cohort was significant and was due primarily to the larger English GPA and social studies GPA means for Cohort 2 versus Cohort 3. From these findings, it appears that the students who experienced the freshman academy alone performed better academically, specifically in English and social studies, than the students who experienced the freshman academy in combination with the one-to-one laptop initiative.

A set of nonparametric models was constructed to examine the effect of cohort for the count data. The same algorithm as was used in Hypothesis 1 was applied to create categories within each variable.

#### *Credits earned.*

Upon reviewing the histogram of credits, it was evident that there was a large group of students who had earned eight credits during their freshman year, so eight credits was designated as a cut-point in creating categories. There was a moderate size group with six to eight credits, so six credits was designated as another cut-point. In

Model S, a chi-square test was run on the null hypothesis that students in the treatment group and control group were equally represented in each category of earned credits. The null hypothesis was accepted ( $\chi^2 = .55$ ,  $p < .76$ ). Students in both Cohort 2 and Cohort 3 were likely to earn the same number of credits during their freshman year.

#### *Failures.*

For failures, two categories were created: the At Risk category for students who had ANY failures, the Not At Risk for students with no failures. A chi-square test was run on the null hypothesis that students in Cohort 3 and Cohort 2 were equally represented in the At Risk and Not At Risk categories. The null hypothesis was accepted ( $\chi^2 = .82$ ,  $p < .36$ ). Students in both Cohort 2 and Cohort 3 were likely to have the same number of failures during their freshman year.

#### *Discipline referrals.*

Upon reviewing the histogram for disciplinary referrals, it was evident that there was a large group with zero referrals, so zero was a category unto itself. There was also a large group with one referral, so one referral was a category unto itself. Students with two or more referrals were placed in a third group of repeated referrals. A chi-square test was run on the null hypothesis that students in Cohort 3 and Cohort 2 were equally represented in each category of discipline referrals (see Table 18). The chi-square test shows that students in Cohorts 2 and 3 were equally distributed across the categories defined by the number of disciplinary referrals ( $\chi^2 = 5.28$ ,  $p = .08$ ), but there appeared to be a trend that indicates that students in Cohort 3 are slightly more likely to be in the

category of “two or more referrals” than students in Cohort 2. Table 18 shows the frequencies of students in each cell of the crosstable of cohort by discipline referral categories.



Table 18

*The Effect of Cohort Group on Discipline Referral Rate**disciplinary referrals grade 9 category \* Cohort Code for Hypotheses 5 Crosstabulation*

		Cohort Code for Hypotheses 5			
		Cohort 2	Cohort 3		
		Freshman	Freshman		
		Academy	Academy and		
			Laptop	Total	
disciplinary referrals grade nine category	Two or more referrals	Count	56	79	135
		Expected Count	67.7	67.3	135.0
		Std. Residual	-1.4	1.4	
	One referral	Count	41	36	77
		Expected Count	38.6	38.4	77.0
		Std. Residual	.4	-.4	
	Zero referrals	Count	202	182	384
		Expected Count	192.6	191.4	384.0
		Std. Residual	.7	-.7	
	Total	Count	299	297	596
		Expected Count	299.0	297.0	596.0

### *Attendance.*

Upon reviewing the histogram and frequency table for attendance at grade 9, three categories were constructed. The first category was created for students with perfect attendance, the second category for students who attended between one (.5) and 10 absences, and the third category for students who had more than 10 absences. A chi-squared was applied to the null hypothesis that Cohort 2 and Cohort 3 were equally represented in the attendance categories. The null hypothesis was accepted ( $\chi^2 = .48$ ,  $p < .79$ , NS), and no statistically significant difference was found between the attendance rates for Cohort 2 and Cohort 3.

### *Summary for Hypothesis 5*

To summarize the findings for the fifth hypothesis, the null hypothesis was rejected because the multivariate test (Pillai's trace) was significant in Model R for the three GPA criterion variables (grade point average, English GPA, and social studies GPA). The multivariate test showed significant differences between Cohort 3, the cohort who experienced the freshman academy combined with the one-to-one laptop initiative, and Cohort 2, the cohort who experienced the freshman academy without laptops. The univariate effects were also significant for both English GPA and social studies GPA. Cohort 2 had significantly higher scores in their year-end English and year-end social studies grades than did Cohort 3. It appears that the students who experienced only the freshman academy without the one-to-one laptop computer initiative achieved better year-end grades in ninth grade English and ninth grade social studies. Therefore, the null hypothesis was rejected. Using the nonparametric chi-squared analysis, the null

hypothesis was accepted for the credits earned, failures, discipline referrals, and attendance variables; there is not a significant difference between the scores of students in Cohort 2 and the scores of students in Cohort 3 on those variables. However, there was a trend toward significance for the discipline referral variable in that it appeared that students in Cohort 3 were more likely than students in Cohort 2 to receive two or more discipline referrals.

### Summary of the Data Analysis

This chapter presented the results of the study that evaluated the effect of a freshman academy on student achievement and engagement as measured by grade point averages, English grade point averages, social studies grade point averages, credits earned, failures, discipline referrals, and attendance. The study also looked at the impact of a freshman academy on gender subgroups and special education subgroups. The study attempted to test the sustainability of the effects of the freshman academy into the tenth grade year, and it also tested the impact of a freshman academy approach when combined with a one-to-one laptop initiative. Data for this study was historical data collected by Springfield School District and cleaned of student identification information before receipt by the researcher.

MANOVA and chi-squared were used to test a series of hypotheses about the effect of the freshman academy on a set of criterion variables. Repeated measures ANOVA was used to test the longevity of the impact of the freshman academy to see if its participants carried its benefit into the next academic year.

According to the findings, students who experienced the freshman academy in Cohort 2 had higher grade point averages, English grade point averages, and social studies grade point averages than students who did not experience the academy in Cohort 1. Academy students were also less likely to be at-risk for failing a course and were more likely to earn a high number of credits. The effects were similar for males and females, for there was no significant difference between these two subgroups. However, the grade point averages of regular education students seemed to benefit from the freshman academy, while special education students within the academy were more likely to have perfect attendance than those who did not experience the freshman academy.

When testing for sustainability, the students within the academy experienced a sharper decline in social studies grades when they matriculated to tenth grade than students who did not experience an academy, and students who experienced the freshman academy as part of Cohort 2 had steeper declines in both credits earned and attendance in their tenth grade year.

Contrary to expectations, the one-to-one laptop program seemed to have a negative effect on student achievement, as students who were issued laptops in Cohort 3 performed worse in English and social studies than did students in Cohort 2 who were not issued laptops.

Chapter V will discuss these findings further, examine the implications of these findings, and propose topics for further research studies.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

#### Introduction

This study has examined the effects of a freshman academy small learning community for ninth grade students on student achievement and engagement. Many American high school students have tremendous difficulty in their ninth grade year as they leave their smaller, highly structured elementary or middle schools and enter large, comprehensive high schools. The challenges are even greater for students with learning disabilities or physical disabilities, students from low socioeconomic backgrounds, students who lack adequate parent support, and students who suffer from low self-esteem, drug and alcohol abuse, or depression. However, despite these challenges, most high schools in the United States continue to use a very traditional structure with few, if any, extra supports for incoming ninth graders. Unfortunately, the current system for transitioning ninth grade students into comprehensive high schools is ineffective, and the result is that too many ninth grade students perform poorly in their first year of high school; many of these students end up dropping out of high school, and for these students, the hope for a prosperous future as an adult is bleak (Catteral, 1998; Finn & Voekl, 1993).

One way that schools are trying to reverse this trend is with small learning communities for freshman within large, comprehensive high schools. Advocates claim that freshman academies improve students' academic performance, engagement, and

motivation, and that schools can decrease failures and increase graduation rates by instituting freshman academies (Hertzog & Morgan, 1999; Vander Ark, 2002). Smaller learning environments allow for closer student-faculty relationships, fewer social and peer interaction problems, and more personalized learning experiences for students (Cotton, 1999). Most importantly, smaller learning environments such as freshman academies produce better results on standardized tests (McComb, 2000). This study attempts to evaluate one existing freshman academy to determine its efficacy in accomplishing this mission. Chapter V will present an overview of the study, a summary of the principal findings, a discussion of the findings and their implications for practice, and recommendations for future research in the area of freshman academies and school transitions.

### *Overview of the Study*

The purpose of this study was to describe and evaluate the effects of a new freshman academy program at Springfield High School in Delaware County, Pennsylvania on student achievement and engagement. Specifically, this study focused on how the freshman academy impacted students' grade point averages, year-end English grades, year-end social studies grades, credits earned, failures, discipline referrals, and attendance. The study also examined how these effects might be mediated by gender and special education identification, and it examined whether these effects were sustainable into the tenth grade year. Finally, this study analyzed whether the impact of a freshman academy on student achievement and engagement was intensified when the freshman academy was combined with a one-to-one laptop computer initiative.

*Research Design*

This study design was a quantitative, casual-comparative research design. The study included three cohorts of students in a quasi-experimental design. Cohort 1 consists of 297 students who entered the ninth grade at the beginning of the 2005-2006 school year. These students experienced a ninth grade year that was typical for most high school students in the United States. They took grade specific classes in English, social studies, and science, and the remaining portion of their schedule included multi-grade classes throughout the building that did not have a curriculum set specifically for freshmen. Cohort 1 students were not issued a laptop computer and went through their freshman year with fairly typical access to technology in classrooms. Since these students did not experience the freshman academy initiative nor did they experience the one-to-one laptop computer initiative, they were considered a control group for the first four hypotheses. Cohort 2 consisted of 300 students who entered the ninth grade at the beginning of the 2006-2007 school year and served as the inaugural class of Springfield's freshman academy. These students did not experience the freshman academy with laptops but were issued laptops for the duration of their sophomore year in the 2007-2008 school year. Hence, they were considered a comparison group for the first four hypotheses but were the control group for the fifth hypothesis involving the laptop program. Finally, Cohort 3 consists of 297 students who entered Springfield High School as ninth graders at the beginning of the 2007-2008 school year. These students experienced the freshman academy and were issued laptops in November of their freshman year. Because they experienced both initiatives, they were considered the comparison group for the fifth hypothesis in this study.

Within these cohorts, two subgroups were identified for further analysis: gender and curriculum designation. The differences in male and female achievement and engagement scores were examined in each cohort to evaluate whether the freshman academy had a greater impact on one particular gender. Of the 894 students in this study, 432 were female and 462 were male. The differences in the achievement and engagement scores for students who were identified as special education students and students who were identified as regular education students were also examined in each cohort to evaluate whether the freshman academy had a greater impact on students with special education status. Of the 894 students in this study, 652 were identified as regular education and 242 were identified as special education.

This study tested the following hypotheses:

1. At the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance.
2. Controlling for gender, at the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy) are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance.
3. Controlling for curriculum designation (special education or regular education), at the end of ninth grade, students in Cohort 1 (2005-2006, no freshman academy)



are not significantly different from students in Cohort 2 (2006-2007, initial freshman academy cohort) in grade point average, ninth grade English grade point average, ninth grade social studies grade point average, credits earned, failures, discipline referrals, and attendance.

4. At the end of tenth grade, there are no significant differences between Cohorts 1 and 2 in change between the criterion variables for ninth grade and tenth grade (grade point average, tenth grade English year-end grades, tenth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance at the conclusion of tenth grade).
5. At the end of ninth grade, there is no significant difference between Cohort 2 (freshman academy, no laptops) and Cohort 3 (freshman academy, laptop program) in grade point average, ninth grade English year-end grades, ninth grade social studies year-end grades, credits earned, failures, discipline referrals, and attendance.

### *Data Analysis Procedures*

The data were analyzed using SPSS software, and the hypotheses were tested using multivariate analysis of variance (MANOVA), repeated measures analysis of variance (ANOVA), and post hoc chi-square tables. The data were tested for statistically significant differences on the selected scores (grade point average, English grade point average, social studies grade point average, credits earned, failures, discipline referrals, and attendance) between the cohorts. MANOVA determines a significant effect by looking at mean differences between groups for the criterion variable, and therefore, the

null hypothesis for a MANOVA test is that the populations from which the groups are selected have the same means for all the criterion variables. If the data for a criterion variable did not meet the five assumptions of the MANOVA model, it was tested using chi-squared.

### Summary of the Findings

#### *Hypothesis 1*

The first hypothesis tested whether the students who participated in the freshman academy outperformed those from the previous class who did not participate in a freshman academy. The null hypothesis was rejected because there was a statistically significant difference between the achievement of the two cohorts for the three GPA criterion variables (grade point average, English GPA, and social studies GPA). Although the multivariate test examined all criterion variables simultaneously, it appeared that social studies GPA had the strongest impact. For social studies, the univariate test showed that students in Cohort 2 had higher mean grade point averages than students in Cohort 1. There was also a statistically significant difference in the number of credits earned and the number of failures between the two cohorts. Students in Cohort 2 were less likely to be At-Risk for failing a course and were more likely to earn a high number of credits during their ninth grade year. However, there was no statistically significant difference between Cohort 1 and Cohort 2 on discipline referrals and attendance.

Certainly, the implementation of freshman academy could have led to this result. One of the core components of the freshman academy is the personalized attention that the freshman academy team can give to each of the students within the academy. Cotton (1999) asserts that personalized attention in small learning environments improves achievement and engagement, and Vander Ark (2000) views close teacher-student relationships as a vital component to student success. These findings may suggest that the Springfield High School freshman academy achieved results that are in line with this literature. However, there are other factors that could have led to this significant finding. While the same courses were taught in both years, the ninth grade teachers differed from Cohort 1 to Cohort 2. In particular, the social studies teachers were not the same from Cohort 1 to Cohort 2; only one of the three social studies teachers remained with the freshman from Cohort 1 to Cohort 2. The first team of teachers could have been tougher on assessment, or the second team of teachers could have used more grade inflation in their assessment strategy. Furthermore, the team of social studies teachers within the freshman academy could have been more effective than the team that was teaching freshman in the year before the academy was created. This was a new initiative created by the principal, Dr. Bridget Kelly, who wanted to see the academy succeed; therefore, when she handpicked the teachers for the academy, she could have very well created a more effective team of teachers for the academy to ensure its success. It is possible that the increased GPA had less to do with the academy and more to do with the collective strength of the team of teachers.

While the null hypothesis was accepted for discipline referrals and attendance, the null hypothesis was rejected for credits earned and failures. Interestingly, when Dr. Kelly

proposed the idea for the freshman academy at Springfield High School for the 2006-2007 school year, the impetus behind her proposal was her perception that too many students were failing courses during their freshman year. In the first year of the program, it appears that students are failing less and earning more credits than they did in the traditional model for freshman year. The students who participated in the freshman academy were less likely to be At-Risk for failing a course and were more likely to begin their high school experience by earning a full eight credits toward graduation, the maximum number of credits that a student could earn in one year of high school. This finding is similar to the assertions of Gladden (1998) that students in small learning communities often attain more credits and stay on track for graduation. This result could point to the effectiveness of the academy at making students feel comfortable and supported; however, it could also be a response by the teachers to Dr. Kelly's challenge that fewer students fail. Because the teachers knew of her dissatisfaction with the failure rate and her intrinsic motivation to see the academy succeed, they could have adjusted their assessments accordingly to prevent failures. In any case, these results do point to the fact that the freshman academy at Springfield High School was effective and achieved positive and significant results that were fairly in line with the current literature during the 2006-2007 school year.

### *Hypothesis 2*

To summarize the findings for the second hypothesis, the null hypothesis was accepted for Hypothesis 2 for every criterion variable tested. There was no statistically significant difference between the academic achievement or student engagement for girls

and boys in Cohorts 1 and 2 as measured by grade point average, English GPA, social studies GPA, credits earned, discipline referrals, failures, or attendance. While these findings do not shed light on whether or not the freshman academy is working, it does indicate that boys and girls do not have a significantly different response to the freshman academy treatment. It is interesting to note that this analysis uncovered the fact that females had significantly higher GPAs than did males in English, social studies, and overall, whereas males had significantly higher scores on attendance. While these findings are beyond the scope of this study, they are interesting nonetheless.

### *Hypothesis 3*

To summarize the findings for the third hypothesis, the null hypothesis was rejected and the findings indicate that there is a significant interaction between curriculum designation and cohort in terms of student achievement. The freshman academy seemed to benefit regular education students more in the three GPA criterion variables (grade point average, English GPA, and social studies GPA), and the univariate effect for social studies GPA was approaching significance and seemed to indicate that the regular education students in Cohort 2 had a higher mean social studies average than regular education students in Cohort 1. While this is a positive result, it is not the full expected result. Zigmond (1990) asserts that students with learning disabilities need added support and closer relationships with faculty in order to succeed in their ninth grade year. The freshman academy provided such supports, yet there was no significant difference in the performance of special education students on the academic measures. This result does not seem to be in line with the findings of similar studies.

Conversely, special education students did seem to gain more of a benefit from the freshman academy in terms of attendance, for students with a special education designation who experienced the freshman academy as part of Cohort 2 were more likely to have perfect attendance (eight students) than were special education students in Cohort 1 (only two students). It is possible that these special education students, who are often easily intimidated by the increased workload in high school compared to middle school, felt more comfortable within the freshman academy and therefore avoided school less than special education students in a traditional ninth grade program. Because there are fewer than 10 students in this portion of the study, these results could be the result of dealing with different students in Cohort 1 and Cohort 2. The null hypothesis was accepted for credits earned, failures, and discipline referrals.

#### *Hypothesis 4*

To summarize the findings for the fourth hypothesis, the null hypothesis was accepted for Hypothesis 4 for the criterion variables of grade point average, English GPA, credits earned, failures, discipline referrals, and attendance. The null hypothesis was rejected for the criterion variable social studies GPA because there was a statistically significant interaction between cohort and time for the criterion variable social studies GPA. It can be concluded from this finding that the students who experienced the freshman academy as part of Cohort 2 showed a greater decline in social studies grades from ninth grade to tenth grade than the sophomores who did not experience a freshman academy during their ninth grade year. This finding could suggest that the impact that the freshman academy has on student achievement, which is illustrated by the findings

for Hypothesis 1, is not sustained beyond the freshman year and into the sophomore year. Furthermore, this finding may indicate that students who experience the freshman academy approach in ninth grade have more trouble adjusting to the increased workload and increased expectations of their tenth grade year; in essence, it seems as though the freshman academy approach may actually delay the transition problems faced by students when they matriculate into high school, and because the transition is delayed one year, the transition difficulties are actually more severe. However, in light of the findings for Hypothesis 1 that the students in the freshman academy achieve higher social studies grades than the students who experience ninth grade without an academy, this finding could also be the result of a natural correction necessitated by the grade inflation utilized by the new group of social studies teachers for the 2006-2007 school year.

Although they were not statistically significant, there seemed to be two emerging trends illustrated by the data with the criterion variables of credits earned and attendance. Students who experienced the freshman academy as part of Cohort 2 seemed to have steeper declines in both credits earned and attendance in their sophomore year compared to students who did not experience the freshman academy as part of Cohort 1. Again, this could indicate that the effects of the freshman academy are not sustained into the sophomore year. Similar to the decline in social studies grades, these findings indicate that although the academy benefits students during their ninth grade year, it actually puts them at a disadvantage in their tenth grade year and delays the effects of the transition into high school until their second year of high school when both workload and expectations are intensified.

*Hypothesis 5*

The findings for Hypothesis 5 were perhaps the most unexpected. The null hypothesis was rejected because the multivariate test showed significant differences between Cohort 3, the cohort that experienced the freshman academy combined with the one-to-one laptop initiative, and Cohort 2, the cohort that experienced the freshman academy without laptops. The univariate effects were also significant for both English GPA and social studies GPA. What was unexpected was that Cohort 2 had significantly higher scores in their year-end English and year-end social studies grades than did Cohort 3. It appears that the students who experienced only the freshman academy without the one-to-one laptop computer initiative achieved better year-end grades in ninth grade English and ninth grade social studies. The expectation was that the laptops would improve instruction and student achievement; these findings indicate that laptops did just the opposite. It is entirely possible that the infusion of laptops into the classroom setting created a distraction, and that students lost focus upon having full access to laptop computers both during in class and after-school hours. It is also possible that the teachers within the freshman academy were ill-equipped to use the laptops effectively for instructional purposes. These teachers may have been trying lessons and strategies for the first time, and with the newness, there may have been an implementation dip. If this was the case, the effectiveness of the laptops may improve as the initiative continues into subsequent years.

Overall, the infusion of the laptops did not seem to have a significant effect on credits earned, failures, discipline referrals, and attendance variables; there is not a significant difference between the scores of students in Cohort 2 and the scores of



students in Cohort 3 on those variables. However, there was a trend toward significance for the discipline referral variable in that it appeared that students in Cohort 3 were more likely than students in Cohort 2 to receive two or more discipline referrals. This increase may have been the result of students misusing the laptop computers. The one-to-one laptop initiative experienced approximately a five percent breakage rate for the year, and some of this breakage was due to mishandling, misuse, or abuse by the students. There were also discipline referrals for students accessing inappropriate websites with their laptops and storing inappropriate material on their laptops. Students were not allowed to download movies or songs onto their laptops, and they were prohibited from accessing chat rooms, messenger services, and social networking websites during instructional periods. Some of these referrals were caused by these new rules and new technological issues. Hence, these referrals would represent a new type of infraction and would likely add to the mean number of discipline referrals recorded for the school year.

### Discussion and Implications

The literature presented in Chapter II indicates that freshman academies, small learning communities, and small schools increase student achievement and engagement. McAndrews et al. (2002), Vander Ark (2002), and McComb (2000) assert that SLC's produce better graduation rates, better grades, and better test scores than traditional learning environments, and Cotton (1996) and Gladden (1998) have shown that SLC's increase credit acquisition and attendance and decrease failure rates. The Springfield High School freshman academy seems to accomplish similar results; students who experienced the freshman academy attained higher grade point averages and more credits,

and they seemed to be less likely to be at-risk for failure. With these findings in mind, it certainly appears that the freshman academy at Springfield High School is producing results that are, for the most part, in line with its expectations, and the program should be continued in future years. The findings suggest that the freshman academy produced its best results within the social studies department; this finding should be explored further to isolate the reasons behind this increase and determine whether the increase in social studies grades within the academy can be transferred to other discipline areas within the academy. However, as the program continues, two areas need further exploration.

First, the findings in this study indicate that the effects of the freshman academy are not sustained into the sophomore year, and furthermore, the findings seem to indicate that the academy may even put students at a disadvantage as they continue their high school careers into the sophomore year. As the literature presented in Chapter II outlines, students perform better in smaller school environments, and they often have difficulty when transitioning from a small environment into a large environment. While the freshman academy may ameliorate the difficult transition between eighth grade and ninth grade, it does not seem to eradicate the transition that Springfield students must face when they leave a teamed learning approach and enter the high school at-large. Since the freshman academy as a stand-alone program seems to be doing what it is supposed to be doing, more focus needs to be given to the upperclassmen. If the small learning community approach works for freshman, it very well may be an approach that could work for all high school students at Springfield High School. Administrators and teachers at Springfield High School must now look at how to integrate the small learning community concept into the upper grades so that the tough transition from a small

learning community to a large learning community is not simply delayed but eliminated altogether.

Second, the one-to-one laptop initiative does not seem to have a positive impact on student achievement and engagement and does not seem to intensify the effects of the freshman academy; in fact, the laptop initiative seems to have a negative impact on academic achievement and discipline. Obviously, that is not the result that the administration at Springfield High School (or the Classrooms for the Future program funded by Commonwealth of Pennsylvania) wanted to see from such a costly initiative. However, there are a few things that need to be considered when determining the future of the laptop program. First, this initiative was in its first year and did dramatically change the way in which teachers were expected to teach. Unlike the implementation of the freshman academy initiative, which did not necessitate a change in the instructional methods used within the classroom, the one-to-one laptop initiative dramatically changed the tools available to teachers, the primary modes of instruction, and the opportunities for instructional activities. In essence, every teacher in the program was similar to a person new to the teaching profession, and they were all learning how to operate within a 21<sup>st</sup> century classroom. While such a challenge is exciting, it does bring along with it a new set of obstacles. Teachers within the academy were given 30 hours of professional development before embarking on this initiative, but it was quickly apparent that 30 hours was not nearly enough time spent on professional development. Furthermore, the computer equipment given to both teachers and students was not as reliable as it should have been or needed to be for a smooth implementation, and the processes and procedures to make the program run smoothly were not yet institutionalized.

Consequently, the program experienced an implementation dip that may or may not disappear as the program, processes, and procedures are refined in the coming school years.

In the not-so-distant future, all students in high school and even elementary and middle school will have one-to-one access to laptop technology, and it is quite clear that the 21<sup>st</sup> century classroom will be one with unlimited access to technology and the internet. As Springfield's one-to-one laptop initiative moves forward, many of the obstacles faced in its first year will be overcome. Teachers receive additional training and should be trained more extensively to manage and utilize these innovative classrooms of the future, and the program itself should be studied again in subsequent years to determine its worth and viability as an effective educational reform. If further studies reveal similar results, then the one-to-one program should certainly be reevaluated. It is entirely possible that high school students are not mature enough to gain the maximum benefit from this technology and that such accessible technology provides more of a distraction than a useful benefit; however, I expect future studies to reveal just the opposite.

#### Recommendations for Further Research

This study reports several significant findings in regards to the freshman academy program created and implemented at one comprehensive high school in suburban Philadelphia. The results from this study do allow future researchers to duplicate the study using other student populations in this and other school settings. These recommendations will expand upon the findings of this report:

1. This study should be replicated with a larger sample size representing more than one high school. The sample in this study included students from one particular high school representing one particular racial and socioeconomic community. As the research in Chapter II suggests, this small learning community approach may be quite effective with students from urban communities and/or low socioeconomic backgrounds. A subsequent study could compare the effectiveness of this approach between urban, suburban, and rural communities. School size could also be factored into a subsequent study.
2. Since this study focuses on quantitative data, a qualitative study should be conducted to determine teacher and student perceptions of the academy experience. It would be important to get a sense of how comfortable students feel as part of the freshman academy and how effective teachers believe this grade-level isolation is on increasing instruction and achievement. Cotton (2001), Gladden (1998), and Wasley et al. (2000) assert that small learning communities such as a freshman academy also improve teacher satisfaction. A qualitative study focusing on teacher perceptions may support or disprove these assertions.
3. Once the three cohorts have taken the Pennsylvania System of School Assessment exam (PSSA) during their junior years, the results of the standardized testing should be analyzed and compared to determine whether the freshman academy impacted test scores on a standardized measurement tool.
4. The laptop program should be evaluated in a longitudinal study over the next three to five years. Since the program is new, and since both the teachers and the students were implementing this technology for the first time, there very well

could have been an implementation dip that would disappear in subsequent years.

Further studies should be done on how teachers are using the laptops within the classroom experience to determine whether the laptops are increasing or maintaining the students' time on task and whether the laptops are enabling teachers and students to present and learn content better than with traditional methods. A study could analyze the impact of different technology usage models (one-to-one laptop initiatives, laptops in carts, stationary desktops) to find the level of technology implementation that will maximize student achievement.

5. In terms of academics, this study was limited to overall grade point averages and the year-end grades in English and social studies. Because there is not a standard freshman-year curriculum in math and science and because students take a variety of math and science courses during their freshman year, these discipline areas were not included in this study. However, it would be beneficial to include more discipline areas, including math and science, in subsequent studies.
6. This study focused on the students' achievement and engagement during the school day in their academic classes. The effects of the freshman academy, as the research presented in Chapter II suggests, may have an impact long after the school day has ended and may result in increased levels of student participation in extracurricular activities. Raywid (1996) and Gladden (1998) assert that students in smaller learning environments more often participate in extracurricular activities and more often hold student leadership positions. This very important indicator could be included in subsequent studies.

7. As highlighted above in the discussion of Hypothesis 2, there were some interesting differences between the performance and engagement of girls and boys that were uncovered in this research. Female students achieved significantly higher grade point averages, and their year-end grades in both English and social studies were significantly higher. On the other hand, male students had significantly higher attendance rates than did female students. While not pertinent to this particular research project, these differences could certainly be explored in subsequent research projects.
8. As the findings in Hypothesis 4 suggest, the impact of the freshman academy does not seem to be sustained into the sophomore year. In fact, the students who participated in the freshman academy seemed to have a greater decline in academic achievement when they matriculated into tenth grade. A subsequent research project could explore small learning community initiatives that would alleviate this dip. For instance, a researcher could study the effects of a small learning community approach on a cohort of tenth grade students to determine if this approach should be used for tenth-graders, or even all high school students. Several high schools throughout the nation have implemented career academies or small learning communities focused on particular academic interests (humanities, science and engineering, health and human services, etc.). The impact of these academies could be studied to determine whether the findings in this study could be replicated with upperclassmen in similar educational programs.

## Conclusion

Chapter V has presented the findings of the study that determined the effects of a freshman academy small learning community on student achievement and engagement as measured by grade point average, English grade point average, social studies grade point average, credits earned, failures, discipline referrals, and attendance. A student's ninth grade year is perhaps his or her most important year of high school, and this introductory year can provide students with a sturdy foundation for success in subsequent years. However, the challenging transition from smaller, more intimate middle schools into comprehensive high schools often does just the opposite; students fall behind in their first year of high school and continue to fall further behind in their subsequent years. The outcome for these struggling students is all too often dropping out of high school, and the economic and career implications of dropping out are dire. The findings in this study show that a freshman academy approach does significantly and positively impact student achievement and some indicators of student engagement. While further research should be done on freshman academies, this study does show that small learning communities for freshman can help ease the transition between eighth and ninth grade, and the freshman academy is a viable educational reform for high school administrators who are looking to increase the achievement and engagement of their youngest students.



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## Appendix A

**SPRINGFIELD SCHOOL DISTRICT**  
***"We Believe Every Student Can Read"***

**Dr. James P. Capolupo**  
111 West Leamy Avenue  
Springfield, PA 19064



May 15, 2008

To Whom It May Concern,

Christopher M. Fulco, the principal of Springfield High School, has my permission to use Springfield High School's freshman class in a doctoral study at Seton Hall University on the effectiveness of a Freshman Academy. Mr. Fulco may use grade point averages, credit retention rates, failure rates, attendance rates, discipline referral rates, and any other data needed for the study from the freshman classes of 2005-2006, 2006-2007, and 2007-2008.

I look forward to the results of the study and to reading this study upon its completion.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Capolupo", is written over a horizontal line.

Dr. James P. Capolupo

Superintendent of Schools

**SPRINGFIELD SCHOOL DISTRICT**  
***"We Believe Every Student Can Read"***

**Dr. James P. Capolupo**  
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I look forward to the results of the study and to reading this study upon its completion.

Sincerely,

A handwritten signature in cursive script, reading "Geraldine Sullivan".

Mrs. Geraldine Sullivan

President, Board of School Directors